

CITY OF FLAGSTAFF STAFF SUMMARY REPORT

To: The Honorable Mayor and Council
From: Dan Holmes, PW Project Manager
Submitted For: Erik Solberg, Public Works Director
Date: 07/30/2012
Meeting Date: 09/04/2012



TITLE:

Consideration and Approval of Construction Contract: Pulliam Airport Concrete Ramp Joint Repair Project.

RECOMMENDED ACTION:

1. Approve the construction contract with Robert E. Porter Construction in the amount of \$186,284.26 for the base bid only, with a 30 day contract time, subject to approval from ADOT Multimodal Planning Division, Aeronautics Group;
2. Approve change order authority in the amount of \$18,628.43(10%) of the contract amount to cover potential costs associated with unanticipated items of work; and
3. Authorize the City Manager to execute the necessary documents.

Policy Decision or Reason for Action:

Provide improved safety and infrastructure maintenance.

Financial Impact:

This project was originally budgeted in FY 2012 in the amount of \$223,710. Expenditures totalling \$42,348 were projected to occur last year so a budget of \$181,362 in account 270-3780-783 was entered for FY2013. No expenditures have occurred to date, so while the budgeted amount in the current fiscal year is less than the contract amount, the entire project amount and grant reimbursement are still available. The project is funded by a grant from ADOT Multimodal Planning Division - Aeronautics Group in the amount of \$222,030 (90% of the total project cost) with a City match of \$24,670.

Connection to Council Goal:

Public Safety, Livability, and Maintaining Reliable Infrastructure.

Has There Been Previous Council Decision on This:

Yes. Council accepted a grant from ADOT Aeronautics on February 21, 2012 in the amount of \$201,339.00 to fund the project. Council approved the design contract for this project at the regularly scheduled meeting of April 17, 2012. In addition, the City will receive a grant amendment # 1 in the amount of \$20,691 to cover additional project cost.

Options and Alternatives

- 1) Approve the construction contract as presented. This would allow for timely completion of the project;
- 2) Reject approval of the contract and direct staff to re-advertise for bid. This would effectively delay the project until next year due to weather considerations.

Background/History:

City Council approved award of the design services agreement for this project on April 17, 2012. That design work is now complete. The project was first advertised for bid on July 18, 2012. Bids were opened on August 2, 2012. A total of two firms submitted bids for the project. A tabulation of the 2 (two) bids received is attached and is summarized below:

Bidder	Base Bid	Bid Alternate	Total Amount Bid
Consultant's Estimate	\$ 112,750.00	\$ 109,750.00	\$ 222,500.00
Robert E. Porter Construction	\$ 186,284.26	\$ 169,731.35	\$ 356,015.61
Granite Construction	\$ 192,229.00	\$ 155,806.00	\$ 348,035.00

Key Considerations:

Replacement of the concrete ramp joints is a routine maintenance function which seals the joints from water penetration and eliminates the potential for degradation of the subsurface soils and consequent damage to the concrete pavement.

Community Benefits and Considerations:

The purpose of the project is to use the available grant funds in the most efficient manner to lengthen the service life of the concrete pavements and to avoid costly pavement reconstruction in the future.

Community Involvement:

The Public Participation Goals of Inform and Involve were used In public meetings where the City Airport Commission reviews the Airport Capital Improvement Plan and is updated monthly on project progress and impacts.

Date of Council Approval:

Attachments: Bid Tabulation
 Construction Contract

Form Review

Inbox	Reviewed By	Date
Legal Assistant	Margie Brown	07/30/2012 09:47 AM
PW Project Manager (Originator)	Margie Brown	07/30/2012 10:08 AM
Purchasing Director	Margie Brown	07/30/2012 10:09 AM
PW Project Manager (Originator)	Dan Holmes	08/08/2012 10:40 AM
Airport Director	Barney Helmick	08/13/2012 08:56 AM
Grants Manager	Stacey Brechler-Knaggs	08/13/2012 11:34 AM
Purchasing Director	Rick Compau	08/13/2012 01:28 PM

Finance Manager	Brandi Suda	08/13/2012 03:05 PM
Finance Director	Margie Brown	08/15/2012 11:23 AM
Management Services Director	Barbara Goodrich	08/16/2012 09:52 AM
Legal Assistant	Vicki Baker	08/16/2012 02:50 PM
Senior Assistant City Attorney JS	James Speed	08/20/2012 01:58 PM
Public Works Director	Stacy Saltzburg	08/20/2012 02:11 PM
PW Project Manager (Originator)	Dan Holmes	08/20/2012 02:27 PM
DCM - Jerene	Stacy Saltzburg	08/20/2012 02:30 PM
Public Works Director	Stacy Saltzburg	08/20/2012 02:52 PM
PW Project Manager (Originator)	Dan Holmes	08/20/2012 02:58 PM
DCM - Jerene	Erik Solberg	08/20/2012 03:10 PM
DCM - Jerene	Jerene Watson	08/21/2012 07:43 AM
Form Started By: Dan Holmes		Started On: 07/30/2012 07:46 AM
Final Approval Date: 08/21/2012		

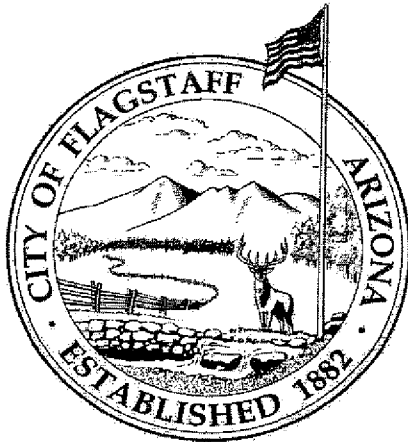
CITY OF FLAGSTAFF
CONCRETE RAMP JOINT REPAIR PROJECT
PROJECT NO. 01-12002 (270-3780-783)

BID TABULATION

CONCRETE RAMP JOINT REPAIR PROJECT COF FILE #01-12002 (270-3780-783) BIDS RECEIVED AUGUST 2, 2012				Consultant's Estimate		Robert E. Porter Construction		Granite Construction			
Item No.	Description	Quantity	Unit	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
BASE BID											
1	CONTRACTORS QUALITY CONTROL	1	LS	\$2,000.00	\$2,000.00	\$52,370.27	\$52,370.27	\$17,970.00	\$17,970.00		
2	MOBILIZATION / DE-MOBILIZATION	1	LS	\$10,000.00	\$10,000.00	\$14,745.14	\$14,745.14	\$15,530.25	\$15,530.25		
3	PARTIAL DEPTH PATCHING OF RIGID PAVEMENT	200	SF	\$36.00	\$7,200.00	\$64.03	\$12,806.00	\$159.00	\$31,800.00		
4	JOINT SPALL REPAIR - EPOXY	115	LF	\$20.00	\$2,300.00	\$55.89	\$6,427.35	\$74.00	\$8,510.00		
5	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 1	26,000	LF	\$3.50	\$91,000.00	\$3.84	\$99,840.00	\$4.55	\$118,300.00		
6	SEALING OF CRACKS IN RIGID PAVEMENT USING SILICONE SEALANT	25	LF	\$10.00	\$250.00	\$3.82	\$95.50	\$4.75	\$118.75		
TOTAL BASE BID					\$112,750.00		\$186,284.26		\$192,229.00		
BID ALTERNATE											
7	CONTRACTORS QUALITY CONTROL	1	LS	\$2,000.00	\$2,000.00	#####	\$42,806.44	\$8,800.00	\$8,800.00		
8	MOBILIZATION / DE-MOBILIZATION	1	LS	#####	\$10,000.00	\$9,352.51	\$9,352.51	#####	\$12,466.00		
9	PARTIAL DEPTH PATCHING OF RIGID PAVEMENT	100	SF	\$36.00	\$3,600.00	\$66.30	\$6,630.00	\$181.00	\$18,100.00		
10	JOINT SPALL REPAIR - EPOXY	150	LF	\$20.00	\$3,000.00	\$49.93	\$7,489.50	\$35.00	\$5,250.00		
11	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 1	24,000	LF	\$3.50	\$84,000.00	\$3.84	\$92,160.00	\$4.12	\$98,880.00		
12	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 2	1,750	LF	\$4.00	\$7,000.00	\$6.42	\$11,235.00	\$7.00	\$12,250.00		
13	SEALING OF CRACKS IN RIGID PAVEMENT USING SILICONE SEALANT	15	LF	\$10.00	\$150.00	\$3.86	\$57.90	\$4.00	\$60.00		
TOTAL BID ALTERNATE					\$109,750.00		\$169,731.35		\$155,806.00		
TOTAL AMOUNT BID (BASE BID PLUS BID ALTERNATE)					\$222,500.00		\$356,015.61		\$348,035.00		\$0.00

Indicates error in bid extension corrected in accordance with the contract documents

Unit Price	Amount
\$0.00	



Concrete Ramp Joint Repair Project

Project Number: 01-12002

ADOT Project No. E2S1X

Bid Number: 2012-51

Account Number: 270-3780-783

Mayor

Gerald W. Nabours

Council

Karla Brewster

Scott Overton

Coral Evans

Celia Barotz

Jeff Oravits

Mark Woodson

City Manager

Kevin Burke

Utilities Director

Brad Hill

Public Works Director

Erik Solberg

Community Development Director

Mark G. Landsiedel

NOTICE TO BIDDERS REQUIRED BID FORMS

THE FOLLOWING ITEMS MUST BE COMPLETED BY THE BIDDING CONTRACTOR AND SUBMITTED WITH THIS COMPLETE AND INTACT BID PACKAGE FOR THIS BID TO BE CONSIDERED RESPONSIVE. ANY AND ALL DEFICIENCIES OF ITEMS LISTED BELOW WILL BE CONSIDERED ADEQUATE REASON TO REJECT THE BID IN ITS ENTIRETY.

- ☐ COMPLETE BID PACKAGE
- ☐ ACKNOWLEDGEMENT OF ADDENDA
(SEE PAGE BR-3)
- ☐ BID SCHEDULE(S)
(SEE PAGE BR-4)
- ☐ EQUIPMENT/MATERIAL SOURCE INFORMATION (N/A)
- ☐ BID PROPOSAL EXECUTION SHEET
(SEE PAGE BR-5)
- ☐ BID BOND
(SEE PAGE BR-6)
- ☐ SIGNATURES, SEALS & NOTARIES (WHEREVER NECESSARY)
- ☐ _____
- ☐ _____
- ☐ _____

This information is provided for your use in preparing all documents as required for a complete Bid Submittal. Please double check all requirements and if you have any questions regarding what is required with a submittal, please call and ask.

CITY OF FLAGSTAFF

PROJECT: CONCRETE RAMP JOINT REPAIR

PROJECT NO: 01-12002

ADOT NO. E2S1X

BID NO: 2012-51

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ADVERTISEMENT FOR BID
Project: Concrete Ramp Joint Repair
PROJECT NO: 01-12002
ADOT No. 2S1X
Bid Number: 2012-51

Sealed Bids will be received at the Office of the City Purchasing Agent, 211 W. Aspen Avenue, until **3:00 p.m. on August 2, 2012** for the Concrete Ramp Joint Repair Project. The Project consists of saw cutting existing concrete ramp joints, removal of existing sealants, chamfering existing concrete joints, placement of new backer rods and sealants, spot spall repairs and partial patching of rigid pavements.

Each Bidder shall submit with their bid, a bid bond for an amount of not less than ten (10) percent of the gross amount of the Bid, payable to the order of the City of Flagstaff. The Bid Bond shall be provided by a surety company holding a certificate of authority to transact business in the State of Arizona in accordance with the requirements of A.R.S. Section 34-201. An unconditional certified check or cashier's check may be submitted instead of a bid bond. Bond is required as a guarantee that the Contractor will enter into a Contract to perform the proposal in accordance with the plans and specifications, or as compensation to the City for damages incurred as provided by A.R.S. 34-201 in the event of failure or refusal of the Contractor to enter into the Contract. The Bond will be returned to the contractors whose proposals are not accepted, and to the successful Contractor, upon execution of a satisfactory Contract, and receipt of Insurance Certificate, Performance Bond and Payment Bond.

The Contract will be awarded to the lowest responsible bidder whose bid is responsive to this Invitation for Bids and will be most advantageous to the City. Responsible factors to be considered may include, but are not limited to, the bidder's past performance on other contracts, and other matters set forth in City of Flagstaff Code 1-20-001-00004. The award may be made to other than the lowest price bid.

Contractors desiring to submit bids shall obtain copies of detailed plans, specifications and proposal forms and full information as to the proposed work from the City of Flagstaff website: <http://flagstaff.az.gov/Bids.asp>. All documents related to the project are located on the City's website. As such, the City does not forward hardcopy documents to the various plan rooms or maintain a bidders list for this project.

Any concerns as to requirements, omissions or discrepancies must be presented to the Owner in writing. The Owner will determine the appropriate action necessary, if any, and issue written addenda. Oral statements of instructions will not constitute an addendum to this solicitation unless confirmed in writing by addenda. Written requests may be submitted via e-mail to either Dan Holmes, Project Manager at dholmes@flagstaffaz.gov, or Patrick Brown, Sr. Procurement Specialist at pbrown@flagstaffaz.gov. Requests for clarifications/questions must be received no later than **3:00 P.M. Thursday, July 26, 2012**.

Interpretations or corrections will be made only by issuance of a written addendum, which will be made available to each known recipient. The City is not responsible for any explanations or interpretations of the documents other than those made by written addendum.

The City of Flagstaff retains the right to reject any or all bids received if the City determines that such rejection is in the best interest of the public.

A Pre-Bid Conference will be held at 10:00 a.m., on Wednesday, the 25th of July, 2012, in the Staff Conference Room at 211 W. Aspen Avenue, Flagstaff, Arizona, 86001.

Publish two (2) consecutive times, **Arizona Daily Sun: July 18th and July 25th, 2012.**

BIDDING REQUIREMENTS

INFORMATION FOR BIDDERS

Bidder's attention is called to the fact that no bid is acceptable without the return of both the properly completed bid packet and bid bond (per the requirements of Title 34, A.R.S.).

Bids will be returned unopened if not submitted properly sealed. Qualified bidders may obtain or examine Plans and Specifications at the office of the City Engineer, 211 W. Aspen Avenue, Flagstaff, Arizona 86001.

The Maricopa Association of Governments Uniform Standard Specifications for Public Works Construction are not attached to these contract documents. These standard specifications, which have been adopted by the City of Flagstaff, are the governing specifications for the Contract, as amended by the MAG Revisions (Exhibit A) and Special Provisions (Exhibit B). These standard specifications may be purchased from the Maricopa Association of Governments, Phoenix, Arizona or accessed online at www.mag.maricopea.gov/publications.cms.

Bids are to be made upon the Bid Schedule Form(s) contained in and submitted with the Contract specification book. **ALL PAPERS BOUND WITH OR ATTACHED TO THE BID FORMS ARE NECESSARY PARTS AND MUST NOT BE DETACHED.**

Each bid must be submitted in a sealed envelope, addressed to Patrick Brown, C.P.M., Purchasing, City of Flagstaff, 211 W. Aspen Avenue, Flagstaff, Arizona 86001.

Each sealed envelope containing a BID must be plainly marked on the outside as BID for **Concrete Ramp Joint Repair Project, Bid No. 2012-51, Project No. 01-12002, ADOT No. E2S1X**. The envelope must indicate on the outside the name of the BIDDER and their address. If forwarded by mail, the sealed envelope containing the BID must be enclosed in another envelope addressed to Patrick Brown, C.P.M., Purchasing, City of Flagstaff, 211 W. Aspen Avenue, Flagstaff, Arizona 86001.

The successful BIDDER shall submit or apply for a City of Flagstaff Sales Tax License upon award of the contract. Applications can be obtained from the City Sales Tax office, 211 W. Aspen Avenue, Flagstaff, Arizona 86001.

A Pre-Construction Conference will be held with the successful Contractor after the Notice of Award is issued. The date and time of the Conference will be agreed upon between the Contractor and the Engineer. The meeting will be held at City Hall, 211 West Aspen Avenue, Flagstaff, AZ 86001. The purpose of the meeting is to outline specific construction items and procedures that the City of Flagstaff (the "Owner") feels require special attention on the part of the Contractor. The Contractor may also present any variations in procedures that they feel may improve the workability of the Project, reduce the cost, or reduce inconvenience to the public. The Contractor shall submit a written proposal at this conference outlining their intended plans for airport safety and security, scheduling and phasing.

**CITY OF FLAGSTAFF, ARIZONA
PROPOSAL**

TO: Honorable Mayor and Council
211 W. Aspen Avenue
Flagstaff, Arizona 86001

In compliance with the Advertisement for Bids, by the City Engineer, the undersigned Bidder:

Having carefully examined the contract documents, site of work, and being familiar with the conditions to be met, hereby submits the following Proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed, and agrees to execute the contract documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the BID SCHEDULE.

Understands that construction of this project shall be in accordance with all applicable laws, Standard Specifications and Standard Drawings and as otherwise required by the Project Plans, General Provisions and Special Provisions.

Understands that this proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check or surety bond (in accordance with Title 34, A.R.S.) for an amount not less than ten percent (10%) of the total amount bid.

Agrees that upon receipt of Notice of Award from the City of Flagstaff, he or she will execute the Contract Documents.

Work shall be completed within thirty (30) calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead-time for obtaining the necessary material and/or equipment. Bidder agrees to pay, as liquidated damages, the sum as stated in the latest revision of the MAG Specifications. Liquidated Damages shall be based upon the final contract amount.

The bidder hereby acknowledges receipt of and agrees his proposal is based on the following addenda. (If there are no addenda, write NONE below).

BID PROPOSAL
FLAGSTAFF PULLIAM AIRPORT
FLAGSTAFF, ARIZONA

Concrete Ramp Joint Repair
ADOT Project No. E2S1X
Bid #2012-51

ITEM	SPEC	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
BASE BID - Concrete Ramp Joint Repair						
1.	P-100	CONTRACTORS QUALITY CONTROL	LS	1	52,370.27	52,370.27
2.	P-102	MOBILIZATION / DE-MOBILIZATION	LS	1	14,745.14	14,745.14
3.	P-511-6.1a	PARTIAL DEPTH PATCHING OF RIGID PAVEMENT	SF	200	64.03	12,806.00
4.	P-511-6.1b	JOINT SPALL REPAIR - EPOXY	LF	115	55.89	6,427.35
5.	P-607S-7.1a	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 1	LF	26,000	3.84	99,840.00
6.	P-607S-7.1c	SEALING OF CRACKS IN RIGID PAVEMENT USING SILICONE SEALANT	LF	25	3.82	95.50
Total Base Bid - Items 1 through 6						
Total Base Bid Amount - (in Numbers)					\$ 186,284.26	
Total Base Bid Amount - (in Words)					One hundred eighty six thousand two hundred eighty four & 26/100 Dollars	

ITEM	SPEC	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
BID ALTERNATE						
7.	P-100	CONTRACTORS QUALITY CONTROL	LS	1	42,806.44	42,806.44
8.	P-102	MOBILIZATION / DE-MOBILIZATION	LS	1	9,352.51	9,352.51
9.	P-511-6.1a	PARTIAL DEPTH PATCHING OF RIGID PAVEMENT	SF	100	66.30	6,630.00
10.	P-511-6.1b	JOINT SPALL REPAIR - EPOXY	LF	150	49.93	7,489.50
11.	P-607S-7.1a	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 1	LF	24,000	3.84	92,160.00
12.	P-607S-7.1b	RESEALING OF JOINTS IN RIGID PAVEMENT USING SILICONE SEALANT - TYP 2	LF	1,750	6.42	11,235.00
13.	P-607S-7.1c	SEALING OF CRACKS IN RIGID PAVEMENT USING SILICONE SEALANT	LF	15	3.86	57.90
Total Alternate Bid - Items 7 through 13						
Total Alternate Bid Amount - (in Numbers)					\$ 169,731.35	
Total Alternate Bid Amount - (in Words)					One hundred sixty nine thousand seven hundred thirty one & 35/100 Dollars	
Total Base Bid and Alternate Bid Amount - (in Numbers)					\$ 356,015.61	
Total Base Bid and Alternate Bid Amount - (in Words)					Three hundred fifty six thousand fifteen & 61/100 Dollars	

The City of Flagstaff retains the right to reject any or all proposals and to waive minor defects and technicalities or withhold the award, as may be deemed best for the interest of the City.

This proposal shall be valid for a period of sixty (60) days.

THIS PROPOSAL IS SUBMITTED BY _____, a corporation organized under the laws of the State of _____, a partnership consisting of _____ or individual trading as _____ of the City of _____

and is the holder of Arizona State Contractor's License(s):

Classification(s) _____

No.(s) _____

Respectfully submitted,

Firm

Address

By (Officer & Title)

Date

ATTEST:

(Officer and Title)

Witness (if Bidder is an Individual)

CITY OF FLAGSTAFF, ARIZONA
STATUTORY BID BOND
PROJECT: CONCRETE RAMP JOINT REPAIR
PROJECT NO. 01-12002
ADOT NO. E2S1X

PURSUANT TO TITLE 34, CHAPTER 2, ARTICLE 1
OF THE ARIZONA REVISED STATUTES
(Penalty of this bond must not be less than 10% of the bid amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____
_____(hereinafter "**Principal**"), as Principal, and _____
_____, a corporation organized and existing under the laws of the State of _____
_____ with its Principal offices in the City of _____
_____(hereinafter "**Surety**"), as Surety, are held and firmly bound unto the _____
_____, (hereinafter "**Obligee**"), in the amount of _____
(Dollars) (\$ _____), for the payment whereof, the said Principal and Surety bind
themselves, and their heirs, administrators, executors, successors and assigns, jointly and severally,
firmly by these presents.

WHEREAS, the Principal has submitted bid for _____

Now, therefore, if the Obligee shall accept the proposal of the Principal and the Principal shall enter into a contract with the Obligee in accordance with the terms of the proposal and give bonds and certificates of insurance as specified in the standard specifications with good and sufficient surety for the faithful performance of the contract and for the prompt payment of labor and materials furnished in the prosecution of the contract, or in the event of the failure of the Principal to enter into the contract and give the bonds and certificates of insurance, if the Principal pays to the Obligee the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal then this obligation is void. Otherwise, it remains in full force and effect provided, however, that this bond is executed pursuant to the provisions of Section 34-201, Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the provisions of the section to the extent as if it were copied at length herein.

Witness our hands this _____ day of _____, 20_____.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

CONSTRUCTION CONTRACT

City of Flagstaff, Arizona

And

Robert E. Porter Construction Company, Inc.

This Construction Contract ("Contract") is made and entered into this ____ day of _____ 2012, by and between the City of Flagstaff, an Arizona municipal corporation with offices at 211 West Aspen Avenue, Flagstaff, Arizona ("Owner") and Robert E. Porter Construction Company, Inc., an Arizona corporation ("Contractor") with offices at 1720 West Lincoln Street, Phoenix, Arizona. Contractor and the Owner may be referred to each individually as a "Party" and collectively as the "Parties."

RECITALS

- A. Owner desires to obtain construction services; and
- B. Contractor has available and offers to provide personnel and materials necessary to accomplish the work and complete the Project as described in the Scope of Work within the required time in accordance with the calendar days included in this Contract.

NOW, THEREFORE, the Owner and Contractor agree as follows:

1. **Scope of Work.** The Contractor shall furnish any and all labor, materials, equipment, transportation, utilities, services and facilities required to perform all work for the construction of the Concrete Ramp Joint Repair Project (the "Project"). Contractor shall construct the Project for the Owner in a good, workmanlike and substantial manner and to the satisfaction of the Owner through its engineers and under the direction and supervision of the City Engineer, or his properly authorized agents including but not limited to project managers and project engineers. Contractor's work shall be strictly pursuant to and in conformity with the Contract.

1.1 A Pre-Construction Conference will be held with the successful Contractor after the Notice of Award is issued. The date and time of the Conference will be agreed upon between the Contractor and the Engineer. The meeting will be held at City Hall, 211 West Aspen Avenue, Flagstaff, AZ 86001. The purpose of the meeting is to outline specific construction items and procedures that the City of Flagstaff (the "Owner") feels require special attention on the part of the Contractor. The Contractor may also present any variations in procedures to improve the workability of the Project, reduce the cost, or reduce inconvenience to the public. The Contractor shall submit a written proposal at this conference outlining intended plans for airport safety and security, scheduling and phasing..

2. **Contract; Ownership of Work.** Contractor shall furnish and deliver all of the materials and perform all of the work in accordance with this Contract; Construction Plans; Special Provisions; the City of Flagstaff Engineering Design and Construction Standards and Specifications; the latest version of the Maricopa Association of Governments ("MAG") Specifications for Public Works Construction and City revisions to the MAG Specifications for

Public Works Construction ("Exhibit A"); and any Arizona Department of Transportation (A.D.O.T.) Standards that may be referenced on the Plans or in the specifications, incorporated in this Contract by reference, plans and associated documents. All provisions of the Invitation for Construction Bids, Performance Bond, Payment Bond, Certificates of Insurance, Addenda, Change Orders and Field Orders, if any, are hereby incorporated into this Contract. All materials, work, specifications and plans shall be the property of the Owner.

The following exhibits are incorporated by reference and are expressly made a part of this Contract:

2.1.1 Revisions of MAG Standard Specifications for Public Works Construction Exhibit A
("Flagstaff Addendum to MAG")

2.1.2 Special Provisions Exhibit B

3. Payments. In consideration of the faithful performance of the work described in this Contract, the Owner shall pay an amount not to exceed **\$186,284.26** to the Contractor for work and materials provided in accordance with the bid schedule, which amount includes all federal, state, and local taxes, as applicable. This amount shall be payable through monthly progress payments, subject to the following conditions:

- 3.1 Contractor shall promptly submit to the Owner all proper invoices necessary for the determination of the prices of labor and materials;
- 3.2 Progress payments shall be made in the amount of ninety percent (90%) of the value of labor and materials incorporated in the work, based on the sum of the Contract prices of labor and material, and of materials stored at the worksite, on the basis of substantiating paid invoices, as estimated by the Owner, less the aggregate of all previous payments, until the work performed under this Contract is fifty percent (50%) complete. When and after such work is fifty (50%) complete, the ten percent (10%) of value previously retained may be reduced to five percent (5%) of value completed if Contractor is making satisfactory progress as determined by the Owner, and providing that there is no specific cause or claim requiring a greater amount to be retained. If at any time the Owner determines that satisfactory progress is not being made, the ten percent (10%) retention shall be reinstated for all subsequent progress payments made under this Contract;
- 3.3 The City Engineer shall have the right to finally determine the amount due to Contractor;
- 3.4 Monthly progress payments shall be made by the Owner, on or before fourteen (14) calendar days after the receipt by the Owner of an approved estimate of the work completed;
- 3.5 Contractor agrees that title to materials incorporated in the work, and stored at the site, shall vest with the Owner upon receipt of the corresponding progress payment;

3.6 The remainder of the Contract price, after deducting all such monthly payments and any retention, shall be paid within sixty (60) days after final acceptance of completed work by the Owner. The release of retention or alternate surety shall be made following the Owner's receipt and acceptance of: Contractor's Affidavit Regarding Settlement of Claims, Affidavit of Payment, Consent of Surety for Final Payment, and Unconditional Full and Final lien waivers from all subcontractors and suppliers who have filed an Arizona Preliminary 20 Day Lien Notice in accordance with A.R.S. §§ 33-992.01 and 33-992.02.

4. Time of Completion. Contractor agrees to complete all work as described in this Contract within **30 calendar days** from the date of the Owner's Notice to Proceed free of all liens, claims and demands of any kind for materials, equipment, supplies, services, labor, taxes and damages to property or persons, in the manner and under the conditions specified within the time or times specified in this Contract.

5. Performance of Work. All work covered by this Contract shall be done in accordance with the latest and best accepted practices of the trades involved. The Contractor shall use only skilled craftsmen experienced in their respective trades to prepare the materials and to perform the work.

6. Acceptance of Work; Non Waiver. No failure of the Owner during the progress of the work to discover or reject materials or work not in accordance with this Contract shall be deemed an acceptance of, or a waiver of, defects in work or materials. No payment shall be construed to be an acceptance of work or materials which are not strictly in accordance with the Contract.

7. Delay of Work. Any delay in the performance of this Contract due to strikes, lockouts, fires, or other unavoidable casualties beyond the control of the Contractor and not caused by any wrongful act or negligence of the Contractor shall entitle the Contractor to an extension of time equal to the delay so caused. The Contractor shall notify the Owner in writing specifying such cause within twenty-four (24) hours after its occurrence. In the event such delay is caused by strikes, lockouts, or inability to obtain workmen for any other cause, the Owner shall have the right but shall not be obligated to complete the work on the same basis as is provided for in Section 13 below (Contract Violations).

8. Failure to Complete Project in Timely Manner. If Contractor fails or refuses to execute this Contract within the time specified in Section 3 above, or such additional time as may be allowed, the proceeds of Contractor's proposal guaranty shall become subject to deposit into the Treasury of the municipality as monies available to compensate the Owner for damages as provided by A.R.S. § 34-201 for the delay in execution of this Contract, and bonds and the performance of work under this Contract, and the necessity of accepting a higher or less desirable bid from such failure or refusal to execute this Contract and bond as required. If Contractor has submitted a certified check or cashier's check as a proposal guaranty, the check shall be returned after execution of this Contract. The certified check or cashier's check of other Bidders shall be returned at the expiration of thirty (30) days from the date of opening of proposals or sooner, if this Contract is executed prior to that time.

9. **Labor Demonstration.** It is understood that the work covered by this Contract is for the Owner's business purposes and that any unfavorable publicity or demonstrations in connection with the work will have a negative effect upon the Owner. If Contractor's actions in performance of the Contract result in any public demonstration on behalf of the laborers or organized labor in the vicinity of the Owner's premises, whether such demonstration is in the form of picketing, posting of placards or signs, violence, threats of violence or in any other form, which in the Owner's judgment, might convey to the public the impression that the Owner or the Contractor or any subcontractor is unfair to laborers or to organized labor, the Owner shall have the right to terminate this Contract immediately, unless the Contractor shall have caused such demonstration to be discontinued within two (2) days after request of the Owner to do so. In the event any such demonstration is attended by violence, the Owner may fix lesser time within which a discontinuance shall be accomplished. In the event of Contract termination, the Contractor agrees to remove from the Premises within twenty-four (24) hours of termination, all machinery, tools, and equipment belonging to it or to its subcontractors. All obligations or liabilities of the Owner to the Contractor shall be discharged by such termination, except the obligation to pay to the Contractor a portion of the Contract price representing the value based upon the Contract prices of labor and materials incorporated in the work as established by the Owner, less the aggregate of all previous payments, but subject to all of the conditions pertaining to payments generally.

10. **Material Storage.** During the progress of the work, the Contractor shall arrange for office facilities and for the orderly storage of materials and equipment. Contractor shall erect any temporary structures required for the work at his or her own expense. The Contractor shall at all times keep the premises reasonably free from debris and in a condition which will not increase fire hazards. Upon completion of the work, the Contractor shall remove all temporary buildings and facilities and all equipment, surplus materials and supplies belonging to the Contractor. Contractor shall leave the Premises in good order, clean, and ready to use by the Owner. The establishment of any temporary construction yard, material storage area or staging area to be located within City of Flagstaff limits and outside the public right-of-way or Project limits generally requires a Temporary Use Permit. (See Exhibit A, Section 107.2.1.)

11. **Assignment.** Contractor shall not assign this Contract, in whole or in part, without the prior written consent of the Owner.

12. **Notices.** All notices or demands required to be given, pursuant to the terms of this Contract, shall be given to the other Party in writing, delivered in person, sent by facsimile transmission, deposited in the United States mail, postage prepaid, registered or certified mail, return receipt requested or deposited with any commercial air courier or express service at the addresses set forth below, or to such other address as the Parties may substitute by written notice, given in the manner prescribed in this paragraph.

If to Owner:

Patrick Brown, C.P.M.
Senior Procurement Specialist
211 West Aspen Avenue

If to Contractor:

Earl E. Lucas, President
Robert E. Porter Construction Company
1720 W. Lincoln Street

13. Contract Violations. In the event of any of the provisions of this Contract are violated by the Contractor or by any of Contractor's subcontractors, the Owner may serve written notice upon the Contractor and the Surety of its intention to terminate such Contract (the "Notice to Terminate"). The Contract shall terminate within five (5) days of the date Contractor receives the Notice to Terminate, unless the violation ceases and Contractor makes arrangements for correction satisfactory to the Owner. In the event of any such termination, the Owner shall immediately serve notice of the termination upon the Surety by registered mail, return receipt requested. The Surety shall have the right to take over and perform the Contract. If the Surety does not commence performance within ten (10) days from the date of receipt of the Owner's notice of termination, the Owner may complete the work at the expense of the Contractor, and the Contractor and his or her Surety shall be liable to the Owner for any excess cost incurred by the Owner to complete the work. If the Owner completes the work, the Owner may take possession of and utilize such materials, appliances and plants as may be on the worksite site and necessary for completion of the work.

14. Contractor's Liability and Indemnification. To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, its agents, representatives, officers, directors, officials and employees from and against all claims, damages, losses and expenses (including but not limited to attorney fees, court costs, and the cost of appellate proceedings), relating to arising out of, or alleged to have resulted from the acts, errors, mistakes, omissions, work or services of the Contractor, its employees, agents, or any tier of subcontractors in the performance of this Contract. Contractor's duty to defend, hold harmless and indemnify the Owner, its agents, representatives, officers, directors, officials and employees shall arise in connection with the claim, damage, loss or expense that is attributable to bodily injury, sickness, disease, death, or injury to, impairment, or destruction of property including loss of use resulting there from, caused by any acts, errors, mistakes, omissions, work or services in the performance of this Contract including any employee of the Contractor or any tier of subcontractor or any other person for whose acts, errors, mistakes, omissions, work or services the Contractor may be legally liable. The amount and type of insurance coverage requirements set forth in the Contract (Section 103.6 of Exhibit A) will in no way be construed as limiting the scope of the indemnity in this paragraph.

15. Non Appropriation. In the event that no funds or insufficient funds are appropriated and budgeted in any fiscal period of the Owner to meet the Owner's obligations under this Contract, the Owner will notify Contractor in writing of such occurrence, and this Contract will terminate on the earlier of the last day of the fiscal period for which sufficient appropriation was made or whenever the funds appropriated for payment under this Contract are exhausted. No payments shall be made or due to the other party under this Contract beyond these amounts appropriated and budgeted by the Owner to fund the Owner's obligations under this Contract.

16. Amendment of Contract. This Agreement may not be modified or altered except in writing and signed by duly authorized representatives of the parties.

17. **Subcontracts.** Contractor shall not enter into any subcontract, or issue any purchase order for the completed work, or any substantial part of the work, unless in each instance, prior written approval shall have been given by the Owner. Contractor shall be fully responsible to the Owner for acts and omissions of Contractor's subcontractors and all persons either directly or indirectly employed by them.

18. **Cancellation for Conflict of Interest.** This Contract is subject to the cancellation provisions of A.R.S. § 38-511.

19. **Compliance with All Laws.** Contractor shall comply with all applicable laws, statutes, ordinances, regulations and governmental requirements in the performance of this Contract.

20. **Employment of Aliens.** Contractor shall comply with A.R.S. § 34-301, which provides that a person who is not a citizen or ward of the United States shall not be employed upon or in connection with any state, county or municipal public works project.

21. **Compliance with Federal Immigration Laws and Regulations.** Contractor warrants that it complies with all Federal Immigration laws and regulations that relate to its employees and complies with A.R.S. 23-214.A. Contractor acknowledges that pursuant to A.R.S. 41-4401 a breach of this warranty is a material breach of this contract subject to penalties up to and including termination of this contract, and that the City retains the legal right to inspect the papers of any employee who works on the contract to ensure compliance with this warranty.

22. **Business Operations in Sudan/Iran.** In accordance with A.R.S. § 35-397, the Contractor certifies that the Contractor and its affiliates and subsidiaries do not have scrutinized business operations in Sudan or Iran. If the City determines that the Provider's certification is false, the City may impose all legal and equitable remedies available to it, including but not limited to termination of this Agreement.

23. **Contractor's Warranty.** Contractor warrants that it complies with all Federal Immigration laws and regulations that relate to its employees and complies with A.R.S. § 23-214.A, Verification of Employment Eligibility. Contractor shall not employ aliens in accordance with A.R.S. § 34-301, Employment of Aliens on Public Works Prohibited. Contractor acknowledges that pursuant to A.R.S. § 41-4401, Government Procurement; E-Verify Requirement; Definitions, a breach of this warranty is a material breach of this contract subject to penalties up to and including termination of this Contract, and that the Owner retains the legal right to inspect the papers of any employee who works on the Contract to ensure compliance with this warranty.

24. **Jurisdiction and Venue.** This Agreement shall be administered and interpreted under the laws of the State of Arizona. The Contractor hereby submits itself to the original jurisdiction of those courts located within Coconino County, Arizona.

25. **Attorney's Fees.** If suit or action is initiated in connection with any controversy arising out of this Agreement, the prevailing party shall be entitled to recover in addition to costs such sum as

the court may adjudge reasonable as attorney fees, or in event of appeal as allowed by the appellate court.

26. Time is of the Essence. Contractor acknowledges that the completion of the Contract by the dates specified final completion is critical to the Owner, time being of the essence of this Contract.

27. Headings. The article and section headings contained herein are for convenience in reference and are not intended to define or limit the scope of any provision of this Contract.

28. Severability. If any part of this Contract is determined by a court to be in conflict with any statute or constitution or to be unlawful for any reason, the parties intend that the remaining provisions of this Contract shall remain in full force and effect unless the stricken provision leaves the remaining Contract unenforceable.

IN WITNESS WHEREOF, the Owner and Contractor, by their duly authorized representatives, have executed this Contract as of the date written above.

(Please sign in blue ink. Submit original signatures – photocopies not accepted)

Owner, City of Flagstaff

Contractor

Kevin Burke, City Manager

Signature

Attest:

Printed Name

City Clerk

Approved as to form:

City Attorney

**CITY OF FLAGSTAFF, ARIZONA
PAYMENT BOND**

PROJECT NAME: Concrete Ramp Joint Repair

PROJECT NUMBER: 01-12002

BID NUMBER: 2012-51

STATUTORY PAYMENT BOND PURSUANT TO TITLE 34
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____
(Hereinafter called the Principal), as Principal, and, _____
_____, a corporation
organized and existing under the laws of the State of _____, with its
principal office in the City of _____ ("Surety"), as Surety, are held and
firmly bound unto the City of Flagstaff, Arizona ("Obligee"), in the amount of _____
_____ Dollars (\$ _____) for the payment
whereof, the said Principal and Surety bind themselves, and their heirs, administrators, executors,
successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee,
dated this _____ day of _____, 20____, to the City of Flagstaff which
Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at
length herein.

Now, therefore, the condition of this obligation is such, that if the principal promptly pays
all monies due to all persons supplying labor or materials to the principal or the principal's
subcontractors in the prosecution of the work provided for in the contract, this obligation is void.
Otherwise it remains in full force and effect.

Provided, however, that this bond is executed pursuant to the provisions of Title 34,
Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in
accordance with the provisions, conditions and limitations of said Title and Chapter, to the same
extent as if it were copied at length in this Contract.

The prevailing party in a suit on this bond shall recover as a part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____ 20____.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

**CITY OF FLAGSTAFF, ARIZONA
PERFORMANCE BOND**

PROJECT NAME: Concrete Ramp Joint Repair

PROJECT NUMBER: 01-12002

BID NUMBER: 2012-51

STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this Bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

That, _____
(hereinafter called the Principal), as Principal, and, _____
_____, a corporation organized and existing under the laws of the State of _____
_____, with its principal office in the City of _____
("Surety"), as Surety, are held and firmly bound unto the City of Flagstaff, Arizona ("Obligee"), in
the amount of _____ Dollars (\$ _____
_____) for the payment whereof, the said Principal and Surety bind themselves, and their heirs,
administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee,
dated this ____ day of _____ 200__ in the City of Flagstaff which
Contract is hereby referred to and made a part hereof as fully and to the same extent as if copied at
length herein.

Now, therefore, the condition of this obligation is such, that if the principal faithfully
performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of
contract during the original term of the contract and any extension of the contract, with or without
notice to the surety, and during the life of any guaranty required under the contract, and also
performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all
duly authorized modifications of the contract that may hereafter be made, notice of which
modifications to the surety being hereby waived, the above obligation is void. Otherwise it remains
in full force and effect.

Provided, however, that this bond is executed pursuant to the provisions of Title 34,
Chapter 2, Article 2, Arizona Revised Statutes, and all liabilities on this bond shall be determined in

accordance with the provisions of said Title and Chapter, to the extent as if it were copied at length in this Contract.

The prevailing party in a suit on this bond shall recover as part of the judgment reasonable attorney fees that may be fixed by a judge of the court.

Witness our hands this _____ day of _____ 20__.

Principal (Seal)

Surety (Seal)

By: _____

By: _____

Agency of Record

Agency Address

EXHIBIT A

REVISIONS OF 2011 MAG STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS
CONSTRUCTION – 2011 EDITION - ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

PART 100 - GENERAL CONDITIONS

SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS

102.1 ELIGIBILITY AND PREFERENCE:

(revise to include the following)

If requested by the City, a Bidder shall furnish satisfactory evidence of the Bidder's competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the Bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available.

In addition, if requested, a Bidder shall furnish the City of Flagstaff with satisfactory evidence of the Bidder's financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the Bidder's financial resources and liabilities as of the last calendar year or the contractor's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the Bidder shall further certify whether the Bidder's financial responsibility is approximately the same as stated or reported by the public accountant. If the Bidder's financial responsibility has changed, the Bidder shall qualify the public accountant's statement or report to reflect the Bidder's true financial condition at the time such qualified statement or report is submitted to the City of Flagstaff.

The Bidder shall submit such "evidence of competency" and "evidence of financial responsibility" to the City of Flagstaff no later than five (5) days after receipt of a written request by the City of Flagstaff.

Each bidder, contractor and subcontractor shall possess and maintain the appropriate contractor's license for the work included in this contract. The appropriate license shall be as required by the Arizona State Registrar of Contractors and as required by Arizona Revised Statutes Chapter 10, Title 32.

102.2 CONTENTS OF PROPOSAL PAMPHLET:

(third paragraph, revise last sentence to read as follows)

In the case of conflict, the following order of precedence shall govern:

1. Construction Plans
2. Special Provisions
3. General Provisions
4. City of Flagstaff Standards and Specifications
5. MAG Standards and Specifications
6. ADOT Standards and Specifications
7. FHWA Manual of Uniform Traffic Control Devices

(revise to include the following)

The Plans, Specifications and other Documents designated in the Contract Documents shall be considered a part of the Contract whether attached or not.

The City of Flagstaff reserves the right to refuse to issue to or accept a proposal form from a prospective Bidder should such Bidder be in default for any of the following reasons:

- (A) Failure to comply with any pre-qualification regulations of the City of Flagstaff, if such regulations are cited, or otherwise included, in the Proposal as requirement for bidding.
- (B) Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force (with the City of Flagstaff) at the time the City of Flagstaff issues the Proposal to a prospective Bidder.
- (C) Contractor has defaulted under previous contract(s) with the City of Flagstaff.
- (D) Record of unsatisfactory work on previous contract(s) with the City of Flagstaff.

102.4 EXAMINATION OF PLANS, SPECIAL PROVISIONS AND SITE OF WORK:
(revise to include the following)

Before submitting a bid, each bidder shall examine the site and obtain information which pertains to the physical conditions of the site that may affect the cost, progress or performance of the work. Any and all restrictions or difficulties relating to the completion of the work shall be considered in accordance with the terms and conditions of the contract documents.

102.7 IRREGULAR PROPOSALS:
(revise to include the following)

Proposals shall be considered irregular for the following additional reasons:

- (F) If the Proposal contains unit prices that are obviously unbalanced.
- (G) If the Proposal is not accompanied by the proposal guaranty specified by the City of Flagstaff.

The City of Flagstaff reserves the right to reject any irregular Proposal and the right to waive technicalities for acceptance of Proposals, if such waiver is in the best interest of the City of Flagstaff and conforms to local laws and ordinances pertaining to the letting of construction contracts.

102.12 DISQUALIFICATION OF BIDDERS:
(revise to include the following)

A Bidder shall also be considered disqualified for the following reason:

If the Bidder is considered to be in "default" for any reason specified in Subsection 102.2 as amended by these General Provisions.

102.13 SUCCESSFUL BIDDERS:
(revise paragraph to read as follows)

The City of Flagstaff shall provide only six (6) sets of plans and Contract Documents at no cost. A fee of \$ 20.00 shall be charged for any additional copies.

SECTION 103 - AWARD AND EXECUTION OF CONTRACT

103.6 CONTRACTOR'S INSURANCE:

103.6.1 GENERAL:
(revise subsection to read as follows)

The Contractor and its Subcontractors, at Contractor's and Subcontractors' own expense shall purchase and maintain the herein stipulated minimum insurance with companies duly licensed, possessing a current A.M. Best, Inc. Rating of A-, 7, or approved by the City and licensed in the State of Arizona with policies and forms satisfactory to the City.

All insurance required herein shall be maintained in full force and effect until all work or service required to be performed under the terms of the Contract is completed satisfactorily and formally accepted; failure to do so may, at the sole discretion of the City, constitute a material breach of this Contract.

The Contractor's insurance shall be primary insurance as respects the City, and any insurance or self-insurance maintained by the City shall not contribute to it.

Contractor shall not fail to comply with the claim reporting provisions of the insurance policies or cause a breach of any insurance policy warranty which would affect coverage afforded under insurance policies to protect the City.

The insurance policies, except Worker's Compensation, shall contain a waiver of transfer of rights of recovery (subrogation) against the City, its agents, representatives, directors, officers, and employees for any claims arising out of the Contractor's acts, errors, mistakes, omissions, work or service.

The insurance policies may provide coverage which contain deductibles or self-insured retentions. Such deductible and/or self-insured retentions shall not be applicable with respect to the coverage provided to the City under such policies. The Contractor shall be solely responsible for the deductible and/or self-insured retentions, and the City, at its option, may require the Contractor to secure payment of such deductibles or self-insured retentions by a Surety Bond or an irrevocable and unconditional letter of credit.

The City reserves the right to request and to receive, within 10 working days, certified copies of any or all of the herein required insurance policies and/or endorsements. The City shall not be obligated, however, to review same or to advise Contractor of any deficiencies in such policies and endorsements, and such receipt shall not relieve Contractor from, or be deemed a waiver of the City's right to insist on, strict fulfillment of Contractor's obligations under this Contract.

The insurance policies, except Worker's Compensation, required by this Contract, shall name the City, its agents, representatives, officers, directors, officials and employees as additional insureds.

Required Coverage

A. Commercial General Liability

The Contractor shall maintain Commercial General Liability insurance with a limit of not less than \$1,000,000 for each occurrence with a \$2,000,000 Products/Completed Operations Aggregate and a \$2,000,000 General Aggregate Limit. The Policy shall include coverage for bodily injury, broad form property damage, personal injury, products and completed operations and blanket contractual coverage. Coverage will be at least as broad as Insurance Service Office, Inc. Policy Form CG 00011093 or any replacements thereof. The coverage shall not exclude X,C,U.

Such policy shall contain a severability of interest provision and shall not contain a sunset provision or commutation clause, nor any provision which would serve to limit third party action over claims. The Commercial General Liability additional insured endorsement shall be at least as broad as the Insurance Service Office, Inc. Additional Insured, Form B, CG 20101185, and shall include coverage for Contractor's operations and products and completed operations.

B. Owners and Contractor's Protective Liability

The Contractor shall purchase and maintain, at all times during prosecution of the work, services or operations under this Contract, an Owner's and Contractor's Protective Liability insurance policy for bodily injury and property damage, including death, which may arise in the prosecution of the Work or Contractor's operations under this Contract. Coverage shall be on an occurrence basis with a limit not less than \$1,000,000 per occurrence, and the policy shall be issued by the same insurance company that issues the Contractor's Commercial General Liability insurance.

C. Automobile Liability

Contractor shall maintain Commercial/Business Automobile Liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 each occurrence with respect to the Contractor's any auto, all owned autos, scheduled autos, hired autos, non-owned autos assigned to or used in performance of the Contractor's work. Coverage will be at least as broad as coverage code 1, "any auto", (Insurance Service Office, Inc. Policy CA 00011293, or any replacements thereof). Such insurance shall include coverage for loading and off loading hazards. If hazardous substances, materials or wastes are to be transported, MCS 90 endorsement shall be included and \$5,000,000 per accident limits for bodily injury and property damage shall apply.

D. Worker's Compensation

The Contractor shall carry Worker's Compensation insurance to cover obligations imposed by federal and state statutes having jurisdiction of Consultant's employees engaged in the performance of the work or services; and Employer's Liability insurance of not less than \$100,000 for each accident, \$100,000 disease for each employee, and \$500,000 disease policy limit.

In case any work is subcontracted, the Contractor will require the Subcontractor to provide Worker's Compensation and Employer's Liability to at least the same extent as required of the Contractor.

E. Builder's Risk (Property) Insurance (As Required)

When the project includes construction of a new building, an addition to an existing building, modifications to an existing building, or as otherwise may be required by the contracting agency, the Contractor shall purchase and maintain, on a replacement cost basis, Builder's Risk insurance in the amount of the initial Contract Amount as well as subsequent modifications thereto for the entire work at the site. At a minimum, the policy limits of such insurance shall be equal in face amount to the full Contract Amount. Such Builder's Risk insurance shall be maintained until final payment has been made or until no person or entity other than the City has an insurable interest in the property required to be covered, whichever is earlier. This insurance shall include interests of the City, the Contractor, and all Subcontractors and Sub-Subcontractors in the work during the life of the Contract and course of construction, and shall continue until the work is completed and accepted by the City. For new construction projects, the Contractor agrees to assume full responsibility for loss or damage to the work being performed and to the buildings under construction. For renovation construction projects, the Contractor agrees to assume responsibility for loss or damage to the work being performed at least up to the full Contract Amount, unless otherwise required by the Contract Documents or amendments thereto.

Builder's Risk insurance shall be on an all-risk policy form and shall also cover false work and temporary buildings and shall insure against risk of direct physical loss or damage from external causes including debris removal, demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's service and expenses required as a result of such insured loss and other "soft costs" as required by the Contract.

Builder's Risk insurance must provide coverage from the time any covered property becomes Contractor's control and/or responsibility, and continue without interruption during construction or renovation or installation, including any time during which the covered property is being transported to the construction installation site, and while on the construction or installation site awaiting installation. The policy will provide coverage while the covered premises or any part thereof are occupied. Builder's Risk insurance shall be primary and not contributory.

If the Contract requires testing of equipment or other similar operations, at the option of the City, the Contractor will be responsible for providing property insurance for these exposures under a Boiler Machinery insurance policy.

Required coverages may be modified by an amendment to the Contract Documents.

Certificates of Insurance

Prior to commencing work or services under this Contract, Contractor shall furnish the City with Certificates of Insurance, or formal endorsements as required by the Contract, issued by Contractor's insurer(s), as evidence that policies providing the required coverages, conditions and limits required by this Contract are in full force and effect.

In the event any insurance policy(ies) required by this contract is(are) written on a "claims made" basis, coverage shall extend for two years past completion and acceptance of the Contractor's work or services and as evidenced by annual Certificates of Insurance.

If a policy does expire during the life of the Contract, a renewal certificate must be sent to the City fifteen (15) days prior to the expiration date.

All Certificates of Insurance shall be identified with bid/project number and project name. A \$25.00 administrative fee will be assessed for all certificates received without the appropriate bid serial number and title.

Cancellation and Expiration Notice

Insurance required herein shall not expire, be canceled, or materially changed without thirty-(30) days written notice to the City.

SECTION 104 - SCOPE OF WORK

104.2 ALTERATION OF THE WORK:

104.2.3 DUE TO EXTRA WORK: (revise to include the following)

A Contract Allowance Item is provided for the purpose of encumbering funds to cover the costs to complete items of work not included in the Contract Documents. The amount of the allowance item is determined by the Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amount pre-entered in the bid proposal and shall reflect the same in the total amount bid for the project. The allowance item provides an estimated funding to cover unforeseen changes that may be encountered and corresponding extra work needed to complete the Contract. Extra work, if any, which is to be paid out of this allowance shall be authorized in writing and approved by Field Order prior to proceeding with the work. Extra work shall be paid for by extension of unit bid prices, negotiated price, or on a time and materials basis in accordance with Section 109.5.

It shall be understood that the amount for this item in the proposal is an estimate only and no guarantee is given that the full amount or any portion thereof will actually be utilized. It shall not be utilized without first obtaining an approved Field Order signed by the Contractor and the Engineer.

SECTION 105 - CONTROL OF WORK

105.8 CONSTRUCTION STAKES, LINES AND GRADES: (revise entire subsection to read as follows)

The Contractor shall be responsible for all required construction staking, including pre-construction staking for relocation of existing utilities. All costs associated with this work are to be included in the amount bid for the items of work to which it is incidental or appurtenant. No separate payment will be made for construction staking. All construction staking is to be done under the direct supervision of a Registered Land Surveyor or Civil Engineer. Reference to "the Engineer" in the following paragraphs of this section shall refer to an engineer or surveyor employed by the Contractor.

105.10 INSPECTION OF THE WORK (revise to include the following)

Initial materials testing and inspection services will be provided by the City at no cost to the Contractor. The Contractor shall be responsible for coordinating and scheduling all inspections of the work and shall confirm that the required inspections and material testing are completed and accepted prior to proceeding with additional work. Additional materials testing and/or inspection services, required due to failure of the initial inspection(s) or test(s) or attributable to the Contractor's failure to protect accepted materials or work, shall be paid for by the Contractor.

105.11 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK:
(revise to include the following)

Any work condemned by the Engineer as inferior or not in compliance with the Contract, Specifications, and Plans shall be immediately taken out by the Contractor and any materials so condemned shall be removed, both at the expense of the Contractor, and the Contractor shall promptly replace and re-execute his or her own work in accordance with the Contract, Specifications, and Plans without any expense to the Owner, and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal and replacement.

105.12 MAINTENANCE DURING CONSTRUCTION:
(revise to include the following)

Adequate drainage for the construction area shall be provided at all times. Damage to any portion of the work caused by the Contractor's failure to provide adequate drainage of the construction area shall be repaired at the Contractor's expense. No contract time extension shall be granted for any additional time required to make such repairs.

The Contractor shall control open excavations and stockpiling in a manner to prevent water from running into excavations. Obstructions of surface drainage shall be avoided and means shall be provided whereby storm water and wastewater can flow uninterrupted in existing or established pipes, flow courses, other surface drains, or temporary drains or channels. Material for backfill or for protection of excavations in public roads or easements shall be placed and shaped so as to cause the least possible interference to public travel. In no event shall any flows be allowed to enter private property.

SECTION 106 - CONTROL OF MATERIALS

106.2 SAMPLES AND TESTS OF MATERIALS:
(third paragraph, revise second sentence to read as follows)

Unless otherwise specified, samples and tests will be made in accordance with either: the Materials Testing Manual of the Contracting Agency; the standard methods of AASHTO, ASTM, or ADOT, which were in effect and published at the time of advertising for bids.

SECTION 107 - LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC

107.1 LAWS TO BE OBSERVED:
(revise to include the following)

(G) TAX EXEMPTION: Certain material, machinery and equipment to be installed in this^o project is exempt from sales tax or use tax as allowed in Arizona Revised Statutes Section 42-5061, 42-5009 and Section 42-5159 and by the Administrative Rules and Regulations of the Arizona Department of Revenue; ACC R15-5-608, R15-5-120 and R15-5-2314. The materials, machinery and equipment that are a part of this project and to which the exemption applies are listed below. The City of Flagstaff wishes to rely upon the expertise of the contractor in the purchase of items which qualify for the tax exemption. With respect to purchase of the qualifying items, the Contractor is authorized to act as an agent for the City. This agency agreement is strictly limited to the purchase of the qualifying items to be used in the construction of the project and will not otherwise affect or alter the respective rights, responsibilities and remedies of the parties as specified under this contract. The contractor shall furnish the City a list of suppliers and the material, machinery and equipment to be furnished by each. The City will then issue

the materials and equipment exemption certificate to each supplier pursuant to A.R.S. §42-5009(A)(2). The contractor's applicable unit bid prices for items qualifying for this tax exemption should not include sales or use tax.

1. Pipes, valves and appurtenances four (4) inches in diameter or larger used to transport potable water,
2. Any additional material or equipment identified in the Special Provisions.

107.2 PERMITS:
(revise to include the following)

The City of Flagstaff shall issue a no-fee permit for work in City right-of-way for this Contract. The City shall obtain a permit for work in State of Arizona right-of-way from the Arizona Department of Transportation. The Contractor may not commence work until these permits are issued.

107.2.1 TEMPORARY USE PERMITS:
(revise to include new subsection as follows)

A temporary use permit and above ground fuel storage permit, if applicable is required prior to the establishment of any temporary construction yard, material storage area or staging area located within City limits and outside the public right-of-way or project limits. Temporary Use Permit Applications are considered by the Planning Director upon recommendation by the Development Review Board. The Contractor is responsible for obtaining the necessary Temporary Use Permit should the Contractor's anticipated construction activities require a construction yard, storage area, staging area or any other property use as restricted by City Code.

The time required to process the Temporary Use Permit is approximately twenty-one (21) calendar days and approval or denial of the permit application is at the discretion of the Planning Director in accordance with City Ordinance. Should the anticipated construction activities require a Temporary Use Permit, the successful Contractor shall submit the necessary permit application to the Development Review Board for their consideration no later than ten (10) calendar days following the notice of award. Any delays experienced by the successful Contractor in acquiring the Temporary Use Permit shall not necessarily be grounds for delaying the project notice to proceed.

107.2.2 DISPOSAL OF WASTE AND SURPLUS MATERIAL:
(revise to include the following)

The Contractor may use the Cinder Lakes Landfill site at the prevailing rate for disposal of waste materials. The Contractor may also use the Sinclair Pit at the prevailing rate for disposal of surplus inert materials. The Sinclair Pit is located approximately four miles south of Old Route 66 on Woody Mountain Road and will accept inert materials including soil, rock and plain concrete (no reinforcement).

All disposal costs, regardless of disposal site, shall be included in the bid unit price for the appurtenant or related item of work and no direct payment will be made for disposal of waste or surplus materials. This right of disposal does not apply to any substance or items that are regarded as toxic and/or hazardous by the City, the State of Arizona or the United States Government.

Alternate disposal sites may be proposed by the Contractor but are subject to all applicable local ordinances and codes. In addition to the property owner's written authorization, all disposal sites within the city limits are subject

to review and approval by the Development Review Board and the Planning and Zoning Commission. The disposal of material at alternate disposal sites will not be allowed without written authorization of the owner, approval of the appropriate jurisdictional authority, and the issuance of all necessary permits.

107.2.3 ABOVE GROUND FUEL STORAGE PERMIT:
(revise to include new subsection as follows)

The Contractor shall obtain an Above Ground Fuel Storage Permit from the City of Flagstaff Fire Department, located at 211 W. Aspen Avenue, Flagstaff, Arizona.

107.5 SAFETY, HEALTH, AND SANITATION PROVISIONS:

107.5.3 HAZARDOUS MATERIALS:
(revise to include new subsection as follows)

If the Contractor encounters potentially hazardous material at the site such as asbestos, polychlorinated biphenyl (PCB) or hydrocarbon concentrates, the Contractor shall immediately stop all affected Work, report the condition to the Engineer in writing and take appropriate health and safety precautions. Upon receipt of any such notice, the Engineer will investigate the conditions. If in fact hazardous materials are present in concentrations in excess of those allowed by applicable Federal, State or local regulations, the Engineer shall suspend all affected Work and proceed to have the hazardous material removed or rendered harmless. This may be done by negotiating a Change Order with the Contractor, by means of a separate contract or as the Engineer may otherwise deem expedient.

Once the material has been removed or rendered harmless, the affected Work shall be resumed as directed by the Engineer. If any such incident causes or will cause delay, the Engineer shall make or negotiate with the Contractor, an adjustment in Contract Price or Contract Time for any changes in the Contractor's cost or the time required to perform the Work.

107.7 BARRICADES AND WARNING SIGNS:
(revise to include the following)

The Traffic Barricade Manual referred to under this section and thereafter in the Standard Specifications shall be Part VI of the FHWA Manual of Uniform Traffic Control Devices (MUTCD).

107.8 USE OF EXPLOSIVES:
(first paragraph, revise second sentence to read as follows)

The Contractor shall submit a blasting plan for approval and obtain a Blasting Permit from the City of Flagstaff Fire Department, located at 211 W. Aspen Avenue, Flagstaff, Arizona.

(revise to include the following)

(G) The Contractor shall submit a copy of the approved blasting plan to the Engineer. The plan shall include as a minimum; safety layout, drilling pattern, size and depth of bore, weight and type of charge, delay sequence, contractor's anticipated peak particle velocity at the right-of-way line or nearest structure, and the proposed seismograph locations.

A record of each blast shall be kept and all records including seismograph reports shall be available for inspection. Each record shall provide as a minimum; location, date and time of blast, name of person in charge, number of

holes burdened, spacing, diameter and depth of holes, boring logs to determine top of rock, type and total amount of explosives used, direction and distance to nearest building, type of detonators and delay periods used, and exact locations of seismographs.

When blasting operations are to be conducted within 200 feet of a water line, sewer line or other underground utility, the contractor shall take additional precautionary measures and shall notify the owner of the facility, a minimum of two weeks in advance, that such blasting operations are intended. The Owner may, at their discretion, perform pre-blast and post-blast pressure tests or other inspection of the facility. If any damage occurs as a result of blasting operations, the Contractor shall be responsible for the restoration of the facility to pre-blast conditions.

107.11 CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES:
(revise to include the following)

All power poles, pedestals, guy wires and underground facilities shall be removed and/or relocated by the respective owners of the facilities. The contractor is responsible for the notification and coordination with the utility companies to ensure that this work is accomplished in a manner consistent with the construction schedule.

The Contractor shall perform his or her own utility potholes and identify potential conflicts prior to trenching. The utility pothole information and identification of potential conflicts shall be provided to the Engineer at least two weeks prior to performing trenching or pipeline construction. This will allow the Engineer time to adjust grades if required.

SECTION 108 - COMMENCEMENT, PROSECUTION AND PROGRESS

108.1 NOTICE TO PROCEED:
(revise to include the following)

The Notice to Proceed shall be issued for a start date no later than twenty-seven (27) calendar days following receipt of the Notice of Award. The Contractor shall be required to submit a construction schedule and traffic control plan in accordance with the Contract Documents and the following:

The Contractor shall within seven (7) calendar days of receiving the Notice of Award, submit a construction schedule and traffic control plan to the Project Engineer. The Project Engineer shall promptly review the construction schedule and traffic control plan and either approve them, or provide a written list of the items that will require revision. The Contractor shall submit the corrected construction schedule and traffic control plan within seven (7) calendar days of receiving the Engineer's list of required revisions. The corrected construction schedule and traffic control plan submittal shall address all comments from the Engineer's list of required revisions.

Time is of the essence in submitting the initial and revised construction schedule and traffic control plan, and are each a condition precedent to the Contractor's right and the City's obligation to proceed with the agreement.

If the Engineer approves the second submission of the construction schedule and traffic control plan, a notice will be issued specifying the date on which the Contractor may proceed with the work. If the Engineer does not feel that the construction schedule and traffic control plan are each adequate to manage the contract, the Contractor shall be notified in writing that the Contractor shall elect within three (3) full business days following receipt of the notice to:

1. Submit a revised final construction schedule and traffic control plan together with a cashier's check or bank draft in the amount of two and one half (2 1/2) percent of the contract price as liquidated damages for the delay time lost to that date; or

2. Do nothing, in which case this contract shall be deemed to have been terminated at the Contractor's election. The Contractor shall then have no right or duty to continue performance and the City shall be released from all liability to the Contractor under this agreement.

In the event the Contractor elects the first alternative, the Engineer shall either approve the final construction schedule and traffic control plan if acceptable, in which case the City shall be entitled to the liquidated damages, or shall reject the construction schedule and traffic control plan and return the check or draft. In the latter event, the contract shall be deemed terminated, the liquidated damages provision shall not apply, and the City shall be entitled to recover its actual damages incurred for the Contractor's breach of agreement.

108.3 CORRESPONDENCE TO THE CONTRACTOR:
(revise to include the following)

In addition to written communication to the Engineer, the Contractor shall provide and maintain a contact person or persons that are located within ten miles of the job site at all times throughout the duration of the Contract. This person or persons shall have local telephone accessibility at all times to respond to agency requirements and emergencies. The local location and phone number(s) shall be provided to the Engineer prior to issuance of the Notice to Proceed. Any changes of the location or phone number(s) shall be reported immediately to the Engineer.

108.4 CONTRACTOR'S CONSTRUCTION SCHEDULE:
(revise to include the following)

The Contractor shall prepare and furnish a detailed construction schedule for City review and approval within seven (7) calendar days following receipt of the Notice of Award and in accordance with Section 108.1 of these General Provisions. This schedule shall include, as a minimum, the following:

1. The Contractor shall provide, and indicate on the schedule, the number of crews and all subcontractors that will be used during the course of the work to expedite the progress and ensure prompt completion of the work;
2. Definition of a crew;
 - personnel
 - equipment
 - workdays anticipated or scheduled per week
 - work hours anticipated or scheduled per day
3. The type of work and location of work to be performed on a daily basis including all bid items and any appurtenant work as called for in these Contract Documents;
4. Delivery of equipment and materials;

Critical path project schedules may be required as provided for by the Special Provisions or Project Addenda.

If the Project Engineer determines that the work is not progressing in accordance with the approved schedule, the Contractor shall be required to submit for approval such supplementary schedules as may be required per M.A.G. Spec. Sec. 108.5.

108.5 LIMITATION OF OPERATIONS:
(third paragraph, revise to read as follows)

Except in emergencies endangering life or property, written permission shall be obtained from the City Engineer prior to performing any work on weekends, legal holidays or after regular work hours (hereinafter defined as 7:00 a.m. to 5:00 p.m. - Monday through Friday). Inspection and testing will not be provided on Sundays or City legal holidays without prior approval from the Engineer (72 hour advance notice), and compensation by the Contractor for any necessary personnel, equipment and services.

Overtime compensation for personnel shall be as follows:

Construction Supervisor @ \$ 40.00/hour
Inspector II @ \$ 30.00/hour
Inspector I @ \$27.00/hour
Lab Tech I @ \$ 20.00/hour
Vehicle @ \$1.60/hour

108.7 DETERMINATION AND EXTENSION OF CONTRACT TIME:
(revise to include the following)

The contract time, including final clean up of the project site and storage areas, may be extended as a result of weather conditions that cannot be reasonably anticipated. The number of actual days that the scheduled work is actually impacted by adverse weather shall be recorded monthly during the construction period. The Contractor shall submit claims for the delay of critical work within two working days of experiencing adverse weather and associated project delays.

Contract time extensions due to adverse weather will be considered warranted when actual work critical to the timely completion of the project is delayed for fifty (50) percent or more of the Contractor's scheduled work day and daily precipitation (24 hour period), as recorded by the National Weather Service at Pulliam Airport, is equal to or greater than twenty five (25) percent of the historical monthly average. The City will convert any delays meeting the above requirements to calendar days and extend the contract period as necessary.

108.8 GUARANTEE AND WARRANTEE PROVISIONS:
(revise to include the following)

If requested by the Contracting Agency, the Contractor shall return to the project site eleven months after acceptance of the project and visually inspect, in the presence of the Owner's Representative, all accessible construction items and appurtenances. All defective materials and/or workmanship shall be satisfactorily repaired or replaced at the sole expense of the Contractor.

All costs for the 11-month inspection and repair shall be borne by the Contractor and in figuring his or her bid, the Contractor shall include an appropriate amount for such inspection and possible required repair, and no additional payment will be allowed therefor.

108.12 AUTHORIZED SIGNATURES:
(revise to include new section)

The Contractor shall provide a notarized list of all authorized signatures for project related documents. Only those individuals listed by the Contractor on the project Authorized Signature form shall be authorized to sign the

contract, contract change orders, time extensions, bonds, securities, pay requests, certifications or other documents that affect the execution of the Contract.

SECTION 109 - MEASUREMENTS AND PAYMENTS

109.1 MEASUREMENT OF QUANTITIES: (revise to include the following)

It is the responsibility of the Contractor to conform to the Plans, Typical Sections and Specifications. This shall include, but not be limited to, dimensions, materials, application rates and densities as specified in the Contract Documents. The Contractor shall take all actions necessary to ensure that the work is in conformity. The Contractor shall cooperate fully with the Engineer or Engineer's representative to correct any known non-conformity to plan.

PART 200 - EARTHWORK

SECTION 201 - CLEARING AND GRUBBING

201.3 CONSTRUCTION METHODS: (revise to include the following)

The Contractor shall make every effort possible to avoid damaging existing trees. In the event that any trees suffer limb damage, the Contractor shall trim branches to within 1/2 inch to 1 inch from the tree's trunk. In the event that trees suffer root damage, the Contractor shall trim the tree's lower branches per above, leaving approximately 40% of the tree's original live crown.

No separate payment will be made for trimming trees. The cost thereof shall be considered incidental to the work.

SECTION 205 - ROADWAY EXCAVATION

205.2 UNSUITABLE MATERIAL: (third paragraph, revise to read as follows)

Should unsuitable material be encountered at sub-grade elevation in cut areas or at existing grade in fill areas, the unsuitable material shall be removed and replaced with suitable fill material in accordance with Section 210 and Section 211.

Determination of unsuitable material and the limits and depths of required removal and replacement shall be at the sole discretion of the Project Engineer. In no case shall any unsuitable material be removed without prior written consent of the Project Engineer.

Measurement and payment for removal and replacement of unsuitable material will be by the cubic yard as shown in the proposal. Payment shall be compensation in full for the work complete and in-place including any borrow, permits, pit royalties, all excavation, hauling, placing, compacting, conditioning, watering, and proper disposal, together with all costs appurtenant thereto.

SECTION 211 - FILL CONSTRUCTION

211.2 PLACING:

(fourth paragraph, revise last sentence to read as follows)

However, such material shall not be placed within 3 feet of the finished sub-grade of the fill.

211.3 COMPACTING:

(fifth paragraph, revise last sentence to read as follows)

Each layer shall be compacted to a uniform density of not less than 95 percent, or as directed by the engineer.

(sixth paragraph, revise first sentence to read)

When fill material contains by volume over 25 percent of rock larger than 6 inches in greatest dimension, the fill up to 4 feet below finished sub-grade may be constructed in layers of a loose thickness not exceeding the maximum size of rock in the material. In no case shall such layers exceed 3 feet in thickness.

SECTION 225 - WATERING

225.2 WATER SUPPLY:

(revise to include the following)

The Contractor is advised that the use of fire hydrants as a source of construction water is not guaranteed and is subject to the restrictions, terms and conditions of the City of Flagstaff Utilities Department. Prior to submitting a bid, the Contractor shall determine such restrictions, terms and conditions and shall incorporate the costs thereof into his or her proposal.

If fire hydrants are not available as a source of construction water, reclaimed water will be made available at the Wildcat Hill Wastewater Treatment Plant on East Highway 66 (Class B water) and at the south end of Babbitt Drive at the Rio De Flag Water Reclamation Plant (Class A+ water.) Additional Class A+ reclaimed water bulk loading sites are located in other areas of the city. The contractor should obtain current locations from the Utilities Department. Current charges for the reclaimed water shall apply.

Prior to loading, hauling, and applying reclaim water, the Contractor shall be required to obtain the necessary permit (no fee) at the Wildcat Hill Wastewater Treatment Plant (Class B) or from the Rio De Flag plant (Class A+) and will be responsible for complying with all permit requirements.

PART 300 -- STREETS AND RELATED WORK

SECTION 301 - SUB-GRADE PREPARATION

301.1 DESCRIPTION:

(revise to include the following)

SECTION 315 - BITUMINOUS PRIME COAT

315.2 MATERIALS:

(revise paragraph to read as follows)

Bituminous material shall conform to the requirements of Section 712 or 713 for the type and grade specified.

SECTION 321 - ASPHALT CONCRETE PAVEMENT

321.3 WEATHER AND MOISTURE CONDITIONS:

(revise to include the following)

Asphalt concrete shall be placed only when the underlying surface is dry, and when the atmospheric temperature in the shade is 40°F, or above, and rising.

In addition to the requirements of Table 321.2, the Engineer may authorize placement of asphalt concrete upon surfaces whose temperature is 45 degrees Fahrenheit or above, providing the following conditions are met:

- a. The underlying surface is dry.
- b. The weather is dry and without threat of precipitation.
- c. The temperature of the asphalt concrete mixture is such that the sum of the air temperature plus the temperature of the mixture when placed is at least 310 degrees Fahrenheit.

Asphalt concrete shall not be placed on grade that appears to be frozen, unless specifically authorized by the Engineer.

321.8.3 LEVELING COURSE:

(revise to include the following)

An acceptable surface shall not vary more than ½ inch from the lower edge of a 10-foot straightedge when the straightedge is placed parallel to the centerline of the roadway.

321.10 ACCEPTANCE:

321.10.3 SURFACE TESTING:

(revise to include the following)

The transverse surface joints shall be tested with a 10-foot straightedge and shall conform to the requirements herein for acceptable surface tolerance.

The completed surface shall be thoroughly compacted, smooth and true to grade and cross-section and free from ruts, humps, depressions or irregularities. An acceptable surface tolerance shall not vary more than ¼ inch from the lower edge of a 10-foot straightedge when the straightedge is placed parallel to the centerline of the roadway. The following transverse surface tolerance shall apply at right angles to the centerline where the plans call for a straight transverse grade. The transverse surface shall not vary more than three-eighths of an inch from the lower edge of a 10 foot straightedge when the straightedge is placed at right angles or radially to the centerline where the

approved plans call for a uniform transverse finish grade. This surface specification shall not apply where the plans call for a break in transverse grade such as at a roadway crown or swale. The straight edge shall be furnished by the contractor and shall be acceptable to the Engineer

321.10.4 ASPHALT PAVEMENT THICKNESS
(revise to include the following)

When the deficiency of the pavement thickness exceeds 1/2 inch, the pavement shall be overlaid on the area affected. In no case shall this overlay be less than one City block or 660 feet, whichever is less in length. This overlay shall be placed over the full width of pavement, with a new mat of material specified by the Engineer, equal in thickness to the deficiency but not less than 1 inch in any instance.

321.13 PAYMENT:
(revise second paragraph to read as follows)

No separate payment will be made for SS-1H emulsified asphalt bituminous tack coat.

(third paragraph, revise first sentence to read as follows)

No payment will be made for any overrun in quantity of asphalt concrete in excess of 10 percent based on actual field measurement of area covered, design thickness, a unit weight determined by the mix design unit weight, and the in-place relative density.

SECTION 330 - ASPHALT CHIP SEAL

330.1 DESCRIPTION:
(revise to include the following)

The Engineer will observe the conditions on the job site and set the application rates for the bituminous material and cover material. The Contractor shall limit the quantities of materials applied to reasonably conform to the rates set by the Engineer. The Engineer will periodically examine the quantities for reasonable conformity to the rates specified. The Contractor shall take whatever measures are necessary to bring them into conformity without detrimental effects on the quality of work. If, in the opinion of the Engineer, the application rates continue to be excessive and wasteful, the Engineer may refuse to accept for payment the quantities above the specified application rate.

330.2 MATERIALS:

330.2.1 ASPHALT:
(revise to include the following)

Emulsified asphalt Type CRS-2P shall be used for the chip seal coat.

The Contractor shall submit for approval a certified lab report showing conformity of the bituminous material to the Specifications for CRS-2P shown in Section 713. This report shall be for the actual material to be used on the job.

Additional tests may be taken by the City materials testing laboratory during the progress of the job, to ensure that the same material is being used and that it complies with the Specifications.

330.3 TIME OF APPLICATION AND WEATHER CONDITIONS:
(second paragraph, revise second sentence to read as follows)

The ambient air temperature shall be at least 70°F and rising.

(third paragraph, revise to read as follows)

Asphalt chip seal shall not be performed between October 1 and May 1, unless specifically permitted by the City Engineer.

330.4.2 APPLICATION OF BITUMINOUS MATERIAL:
(revise to include the following)

Asphalt or bituminous material shall be applied only when the temperature of the surface on which the material is to be applied is at least 85 degrees Fahrenheit and the ambient temperature is at least 70 degrees Fahrenheit and rising. The temperature of the emulsified asphalt shall be a minimum 155 degrees Fahrenheit and the quantity shall be between 0.25 and 0.40 gallons per square yard, exact rate to be determined by the Engineer. Rate is tentatively established at 0.30 gallons per square yard for estimating purposes.

330.4.3 APPLICATION OF COVER MATERIAL:
(revise to include the following)

The aggregate shall be uniformly and immediately spread over the asphalt and in no case more than one and one-half minutes after application of the asphalt.

330.4.8 PROTECTION TO ADJACENT PROPERTY:
(revise to include new subsection as follows)

The Contractor shall protect all manhole covers, water valve boxes, and survey monuments, etc., so that no bituminous material or cover material remains on them and the covers can be easily accessed after sweeping. All adjacent sidewalks and driveways shall be swept and maintained clear of loose cover material.

330.5 TRAFFIC:
(revise to include the following)

The minimum traffic free period shall not be less than two (2) hours, but shall be sufficient to allow proper set of seal as determined by the Engineer.

SECTION 336 - PAVEMENT MATCHING AND SURFACING REPLACEMENT

336.1 DESCRIPTION:

(first paragraph, revise to include the following)

The exact points of pavement matching shall be determined in the field by the Engineer.

336.2 MATERIALS AND CONSTRUCTION METHODS:

336.2.1 PAVEMENT WIDENING OR EXTENSIONS:

(first paragraph, revise second sentence to read as follows)

The minimum depth of cut shall be four (4) inches.

336.2.3 TEMPORARY PAVEMENT REPLACEMENT:

(revise first paragraph to read as follows:

Temporary pavement replacement as required in Section 601 shall be hot mix asphalt and shall be a minimum of three inches thick for roadway and a minimum of 1 1/2 inches thick for all other paved surfaces. The amount of liquid asphalt required shall be 4.5 to 5.0 percent using aggregate gradations in accordance with MAG Section 710. Grading tolerances shall be in accordance with MAG Section 321, as applicable.

336.2.4 PERMANENT PAVEMENT REPLACEMENT:

(seventh paragraph, revise first sentence to read as follows)

The surface course shall consist of an asphalt concrete material in accordance with Section 710 as specified by the Engineer to match the existing surface.

(last paragraph, revise to read as follows)

Where deep lift asphalt concrete (asphalt concrete base and asphalt concrete wearing course) exists, the base course replacement shall be made in lifts not exceeding 4 inches in compacted thickness to within 1 1/2 inch of the finish grade.

SECTION 340 - CONCRETE CURB, GUTTER, SIDEWALK, SIDEWALK RAMPS, DRIVEWAY AND ALLEY ENTRANCE

340.2 MATERIALS:

(first paragraph, revise to read as follows)

Concrete shall be class A, containing 5% to 7% air entrainment and conforming to applicable requirements of Section 725.

340.3 CONSTRUCTION METHODS:

(revise to include the following)

The longitudinal extent of any curb and gutter removal and replacement necessary because of nonconformity with the plans or specification, or because of damage prior to acceptance, shall not be less than the appropriate contraction joint spacing.

SECTION 342 - DECORATIVE PAVEMENT, CONCRETE PAVING STONE OR BRICK

342.2 MATERIALS;

342.2.1 SAND AGGREGATE BASE COURSE: (revise paragraph to read as follows)

The sand laying course shall be a clean washed concrete sand conforming to ASTM C-33. The mortar sand shall be a clean washed sand conforming to ASTM C-144. The ABC shall be aggregate base as per MAG Section 702.

342.2.4 CONCRETE PAVERS: (revise paragraph to read as follows)

Brick shall not be used for decorative pavement.

The header shall be Class A concrete with 5 to 7% air entrainment as per Section 725.

342.3 CONSTRUCTION PROCEDURES:

342.3.3 CONCRETE HEADER AND BASE SLAB: (revise paragraph to read as follows)

342.3.6 SAND LAYING COURSE: (revise paragraph to read as follows)

The thickness of the sand laying course shall be 1 inch. Screeding boards shall be used to ensure a uniform thickness. The sand shall not be compacted or walked on. The sand should be wet enough to cling together when compressed lightly in the hand and not fall apart when the hand is re-opened.

342.3.7 CONCRETE PAVING STONES: (first paragraph, revise to read as follows)

The concrete paving stones shall be installed on the undisturbed sand laying course with gaps of 1/16 to 1/8 of an inch between each stone and adjacent stones or retention curb. After the stones are in place, a plate vibrator compactor shall be used to compact the stones. This will require two passes at 90 degrees to each other. After this operation, approximately 1/4 inch of mortar sand will be placed on the stones and a minimum of two passes with the compactor are required. Any excess sand shall be swept into the joints and removed. The completed installation shall be washed down and cleaned. Any cutting of the pavement stone shall be accomplished with a saw.

(second paragraph, revise to read as follows)

The contractor shall lay the paving stones starting from the longest straight line and from a true 90 degree corner. If the corner of the edge retention is not a true 90 degree corner, the paving stones must be laid slightly away (about half the length of a brick) from the edge at a 90 degree angle.

SECTION 345 - ADJUSTING FRAMES, COVERS, VALVE BOXES AND WATER METER BOXES

345.2 ADJUSTING FRAMES:

(second paragraph, revise third sentence to read as follows)

Class A concrete with 5 to 7% air entrainment, shall be placed around and under the frames to provide a seal and properly seat the frame at the required elevation and slope.

(after second paragraph, revise to include the following)

When brick is used under manhole frames for adjustment to grade, brick shall be laid radially and continuously around the manhole opening.

For new manholes, the maximum dimension from top of lid to the top of the cone or bottom of flat top shall be 26 inches.

For existing manholes to be raised in previously paved areas, the maximum dimension from the final finished grade to the bottom of the manhole neck shall be 32 inches. It is the contractor's responsibility to examine each existing manhole and determine the exact nature of the work required to adjust each manhole.

345.3 ADJUSTING VALVE BOXES:

(second paragraph, revise second sentence to read as follows)

Any excavated area shall be filled with Class A concrete, with 5 to 7% air entrainment, as per the Standard detail, or as directed by the Engineer.

(third paragraph, revise second sentence to read as follows)

This collar shall be of Class A concrete with 5 to 7% air entrainment.

PART 400 -- RIGHT-OF-WAY AND TRAFFIC CONTROL

SECTION 401 - TRAFFIC CONTROL

401.5 GENERAL TRAFFIC REGULATIONS:

(revise to include the following)

Within seven (7) calendar days following receipt of the Notice of Award and in accordance with Section 108.1 of these General Provisions, the Contractor shall submit to the Engineer a traffic control plan that shows the control of traffic in accordance with Part VI of the FHWA Manual on Uniform Traffic Control Devices for all phases of the work including nights, weekends and shut down periods, as well as approximate schedule of street closures and detours.

The Traffic Control Plan is to detail the Contractor's proposal for routing traffic and pedestrians around the areas of construction. The Plan shall be coordinated with the proposed construction schedule and show how the locations of the various traffic and pedestrian control devices will change as construction progresses. The Plan shall allow for complete detours around the work areas.

Private and commercial driveways shall not be closed for any period exceeding eight hours during any twenty-four hour period. The affected resident and the City shall be notified 48 hours in advance of any closure. Convenient access to driveways, houses and buildings along the line of work shall be maintained, and temporary crossings or alternate access shall be provided and maintained in good condition, except during that period mentioned above. Business access shall be maintained at all times by at least one driveway.

(eleventh paragraph, revise to read as follows)

The Contractor will reinstall all permanent traffic control devices as required by the approved construction plans and specifications.

(twelfth paragraph, delete last sentence)

401.7 PAYMENT:

(revise paragraph to read as follows)

Payment for all work and materials required to prepare a traffic control plan and provide traffic control during construction shall be made at the lump sum price shown on the Bid Schedule. Full compensation for any required traffic control devices, flag-men, uniformed off-duty law enforcement officers, pilot cars and drivers shall be considered to be included in the lump sum contract price shown and, therefore, no additional payment shall be allowed.

SECTION 405 - MONUMENTS

405.2 MATERIALS:

(second paragraph, revise to read as follows)

All concrete shall be Class A with 5 to 7% entrained air.

SECTION 425 TOP-SOILS

425.2 MATERIALS:

(revise to read as follows)

Existing overburden topsoil shall be salvaged and reused wherever possible. All topsoil, whether existing overburden or imported, shall be reasonably free of roots, heavy clay, clods, noxious weed seeds, coarse sand, large rocks, sticks, brush, litter and other deleterious material, and meet the requirements of Section 795.

The Project Engineer's approval of the proposed topsoil shall be obtained before delivery to the project.

425.4 MEASUREMENT:

(revise paragraph to read as follows)

Unless indicated otherwise by the bid schedule, topsoil shall be measured lump sum, complete in place.

425.5 PAYMENT:

(revise to read as follows)

The quantities measured as provided above, will be paid for in accordance with the contracted price for furnishing and placing topsoil, which price shall be full compensation for the item complete, as described and specified.

SECTION 431 - NATIVE SEEDING:

(revise to include new section as follows)

431.1 DESCRIPTION:

The work under this section shall consist of furnishing, hauling, placing and applying seed and mulch to all areas shown on the plans or as directed by the Project Engineer.

431.2 MATERIALS:

The seed shall consist of Blue Flax, Canada Bluegrass, Prairie Coneflower, Rocky Mountain Penstemon, Streambank Wheatgrass, 'Covar' Sheep Fescue, Little Bluestem, Gaillardia Aristata and California Poppy. Weed content of seed shall not exceed 0.5 percent. Application rates of seed as specified are for Pure Live Seed (PLS). PLS is determined by multiplying the sum of the germination and hard or dormant seed by the purity.

Straw mulch shall be from oats, wheat, rye, or other grain crops of the current season and shall be free of noxious weeds or mold.

431.3 PLANTING AND MULCHING:

The area to be seeded shall be prepared by disking or other approved methods of loosening the soil. Seed shall be planted approximately 1/4 inch deep, with a maximum depth of 1/2 inch. The distance between furrows shall not exceed eight (8) inches. Seeding shall be applied at the following rate:

<u>Type of Seed</u>	<u>Pounds per Acre</u>
Blue Flax	3
Canada Bluegrass	0.5
Prairie Coneflower	1
Rocky Mountain Penstemon	2.5
Streambank Wheatgrass	3
'Covar' Sheep Fescue	3
Little Bluestem	2
Gaillardia Aristata	4
California Poppy	1

Straw mulch shall be applied to the seeded area within twenty four (24) hours and shall be uniformly applied at a rate of 2-1/2 tons per acre.

Mulch shall be anchored into the soil no more than two (2) inches and shall not be covered with an excessive amount of soil. No more than two (2) passes of the anchoring equipment will be allowed.

The application of seeding with hydraulic methods, using a minimum of 1500 pounds of wood cellulose fiber per acre, will be considered an acceptable alternate for planting and mulching seed as described above. Preparation of the seed bed as described above shall be required.

431.4 MEASUREMENT:

Unless indicated otherwise by the bid schedule, seeding and mulch shall be measured on a lump sum basis, complete in place.

431.5 PAYMENT:

The quantities measured as provided above, will be paid for in accordance with the contracted price for furnishing and placing seeding and mulch, which price shall be full compensation for the item complete, as described and specified.

PART 500 - STRUCTURES

SECTION 505 - CONCRETE STRUCTURES

505.3 FORMS:

(tenth paragraph, revise to read as follows)

The Contractor may, with the permission of the Engineer, pour such portions of the concrete for the structure directly against the side of the excavation or sheathing without the use of outside forms, provided that the following conditions are met.

505.6 PLACING CONCRETE:

(first paragraph, add the following after the first sentence)

No concrete shall be placed without the approval of the City Inspector.

505.6.2 ADVERSE WEATHER CONCRETING:

(Subsection (B), revise to include the following)

Concrete operations shall not be continued when a descending air temperature in the shade and away from artificial heat falls below 40 degrees F. nor shall concrete operations be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35 degrees F.

Mixing and placing concrete shall continue no later in any day than that time which will allow sufficient time to place and protect the concrete already placed before the air temperature drops to 35 degrees F.

Concrete operations may be allowed although the air temperature in the shade and away from artificial heat is below the limit permitted above. Where concrete operations are thus allowed, the contractor shall use equipment to heat the aggregates or water or both, prior to mixing. Aggregates shall be uniformly heated to at least 60 degrees F. and shall have no chunks of ice. Equipment used to heat the aggregates shall be such that uniform temperatures are obtained throughout the aggregate within each batch and from one batch to another. Water shall not be heated in excess of 150 degrees F.

The contractor shall provide adequate insulation or heat or both, to protect the concrete after placement. This protection shall be to the extent required to maintain a temperature under the insulation of the concrete of from 60 to 90 degrees F. for a period of 72 hours after placement and from 40 to 90 degrees F. for an additional 96 hours.

Regardless of the air temperature at the time of mixing and placing concrete, the protection specified above shall be provided at all times when the air temperature is below 35 degrees F.

PART 600 - WATER AND SEWER

SECTION 601 - TRENCH EXCAVATION, BACKFILLING AND COMPACTION

601.2 EXCAVATION:

601.2.1 GENERAL:

(revise to include the following)

The contractor shall complete the required excavations in accordance with the details on the Plans and these Specifications. He shall complete the work in whatever type of material he encounters. Rock excavation that is encountered, which shall include shallow rock in ledges, in bedded deposits, in unstratified masses, and conglomerate deposits which are so firmly cemented they cannot be removed without blasting or other approved means, will be measured and paid for separately at the unit price bid per cubic yard for Trench Rock Excavation. However, no special payment shall be made for trench excavation other than rock excavation, the cost of which shall be included in the unit price bid for the item to be constructed or installed.

For projects where trench rock excavation is anticipated, the estimated contingent quantity is shown in the proposal under the bid item TRENCH ROCK EXCAVATION (CONTINGENT BID ITEM). For the purpose of this contract, rock shall be defined as that material that cannot be excavated by means of a Cat 235 Track hoe or approved equal. Measurement of rock excavation shall be per cubic yard in-place. This volume of rock will be measured using the maximum trench width allowed in accordance with Table 601-1, the lineal footage of actual rock excavation required and the actual depth of rock as determined by the Engineer or Inspector by visual inspection of the trench after rock excavation and before back-filling.

It shall be understood that the contingency quantity for Trench Rock Excavation is an estimate only and no guaranty is given that the full amount or any portion thereof will actually be utilized.

601.2.9 SHORING AND SHEETING:

(revise to include the following)

It shall be the Contractor's responsibility to provide such trench bracing, sheeting, or shoring as may be necessary to protect existing improvements outside the trench and to ensure ground alongside the excavation will not slide or settle. Existing improvements outside the trench, either public or private, that are damaged due to lack of trench bracing, sheeting, or shoring shall be removed and replaced in kind at the Contractor's expense.

601.2.11 DEWATERING:

(revise to include new subsection as follows)

All water encountered during the excavation shall be disposed of by the Contractor in a manner such that it will not damage public or private property or create a public nuisance or health problem. The cost of furnishing pumps, pipes and equipment for dewatering will be considered incidental to the work and no additional payment will be made.

601.4.3 BACKFILL:
(second paragraph, revise to read as follows)

Water consolidation (flooding, jetting, etc.) will not be permitted.
(fourth paragraph, revise to read as follows)

When mechanical compaction is used, backfill shall be placed in lifts not exceeding one foot in compacted height regardless of pipe size, material or backfill type.

601.4.4 COMPACTION DENSITIES:
(Table 601-2, revise to read as follows)

TABLE 601-2				
MINIMUM DENSITY REQUIRED				
Backfill Type	Location	From Sub-grade to 2' Below Sub-grade	From 2' Below Sub-grade to 1' Above Top of Pipe	From 1' Above Top of Pipe to Bottom of Trench
I	Under any existing or proposed pavement, curb, gutter, sidewalk, or such construction included in the contract, or when any part of the trench excavation is within 2' of the above.	100% For Granular, 95% For Non-Granular	95%	95%
II	On any utility easement, street, road or alley right-of-way outside limits of (I).	90%	90%	95%
III	Around any structures or exposed utilities.	95%	In all cases	

601.7 PAYMENT:
(revise to include the following)

Payment for trench rock excavation will be made on a unit price basis, per cubic yard, as measured above for all water lines 4" in diameter and larger and all sanitary and storm drain sewers 8" in diameter and larger. No separate payment will be made for over-excavation. Traffic control for all blasting operations shall be in accordance with Part VI of the FHWA Manual on Uniform Traffic Control Devices

Except for trench rock excavation as described above, no pay item will be included in the proposal, nor direct payment made for trench excavation, bedding, back-filling, compaction, shoring, placement of temporary pavement or other incidental features of the work. Costs of these features of the work shall be included in the unit price bid per linear foot for furnishing and laying pipe.

PART 700 - MATERIALS

SECTION 702 - BASE MATERIALS:

702.1 GENERAL: (revise to include the following)

The aggregate base course will be clean and free of organic matter and be of such a nature that it can and will be compacted to a dense, firm layer capable of supporting loaded trucks and self-propelled pavers without rutting. Volcanic cinders shall not be used for base materials.

702.2 CRUSHED AGGREGATE:

702.2.2 GRADING: (Table 702, revise to read as follows)

For aggregate base, the percentage by weight passing the No. 200 sieve, shall be limited to no more than 10 percent.

SECTION 710 - ASPHALT CONCRETE

710.1 GENERAL: (revise to include the following)

Except as required otherwise by the project plans or Special Provisions, the asphaltic concrete designation shall be 3/4 inch.

710.2 MATERIAL:

710.2.1 ASPHALT BINDER: (revise paragraph to read as follows)

The asphalt to be mixed with the mineral aggregate shall be paving grade asphalt conforming to AASHTO Designation MP1, Standard Specification for Performance Graded Asphalt Binder and shall be PG 58-28 unless otherwise specified in the special provisions.

710.2.2 AGGREGATE: (revise to include the following)

Volcanic cinders or materials containing clay balls, coated rock or other deleterious materials shall not be used.

710.3 MIX DESIGN REQUIREMENTS:

710.3.1 GENERAL: (revise to include the following)

The Contractor shall furnish the Engineer with a job-mix formula for the asphalt concrete not less than ten (10) days in advance of actual placement of the material. The job mix formula, upon approval of the Engineer, shall be used to establish the standards to which field test results will be compared, and to determine compliance of the materials furnished with all physical properties of the composite mix and its individual components as shown on the approved job-mix formula. The job-mix formula, with the allowable tolerances for a single test, shall be used for monitoring compliance with the specifications.

The maximum permissible variation in the daily marshall plug unit weight from the unit weight shown in the approved job mix shall be +/- 3%. If the unit weight of the Marshall plug deviates from the permissible variation by more than one percent, payment will be reduced in accordance with Table 321-2.

The aggregates and mix to be incorporated into the work shall also meet the following requirements:

TEST	ACCEPTABLE TEST RESULTS
Loss on Abrasion (C131 and/or AASHTO 96) (After 500 revolutions)	40% max.
Sand Equivalent (ASTM D2419)	50% min.
Absorbed Asphalt Range (ASTM 1559)	0 - 1%
Combined Water Absorption (AASHTO T-84).....	0 - 2.25%
Air Voids Content (mix)	3 % to 5 %
Index of Retained Strength (AASHTO T165, Section 5.1.3)	75 % min.

All asphaltic concrete shall contain a minimum of 1% Portland cement or dry hydrated lime by weight of total mixture.

SECTION 716 - COVER MATERIAL

716.2 STONE CHIPS:

716.2.1 GENERAL: (first paragraph, revise to include the following)

No volcanic cinders will be acceptable for cover material.

716.2.3 GRADATION: (Tables 716-1 and 716-2, revise to read as follows)

GRADATION CM-11

<u>Seive Size</u>	<u>% Passing</u>
3/8 inch	100
No. 4	0-40
No. 8	0-5
No. 200	0-2.0

SECTION 725 - PORTLAND CEMENT CONCRETE

725.1 GENERAL:

(Note (1), revise to read as follows)

As tested in accordance with ASTM C-39. Maximum slump of 4 inches, or as specified in the special provisions, when tested in accordance with ASTM C-143.

Class AA concrete, with 5 to 7% entrained air, shall be used for all valley gutters and as specified.

Class A concrete shall be used for concrete structures, either reinforced or non-reinforced. Additionally, Class A concrete with 5 to 7% entrained air shall be used for all curbs, gutters, sidewalks, and exposed structures except as may be specified otherwise.

Class B concrete shall be used as specified, except that 5 to 7 % entrained air shall be included for all exposed structures.

Class C concrete may be used for thrust blocks, encasements, fill or over excavation, etc.

725.3 AGGREGATES:

(first paragraph, after the second sentence, revise to include the following)

Aggregates must be subjected to five cycles of the sodium sulfate soundness test in accordance with the requirements of AASHTO T-104. The total loss shall not exceed ten percent by weight of the aggregate as a result of the test.

725.4 WATER:

(revise to include the following)

Water shall be sampled and tested in accordance with AASHTO T-26.

SECTION 760 - COATING CORRUGATED METAL PIPE AND ARCHES

760.2 MATERIALS:

(revise to include the following)

All corrugated metal pipe and arches and all spiral rib metal pipe shall be a minimum of 14 gauge and aluminum coated per AASHTO M-36 and AASHTO M-274. No bituminous coated pipe will be accepted.

SECTION 797 - PAVEMENT MARKINGS

(revise to include new section as follows)

797.1 PAINTED PAVEMENT MARKINGS:

All painted pavement markings shall be in accordance with the Arizona Department of Transportation Standard Specifications, Section 708 - Permanent Pavement Markings.

This item of work shall apply to all longitudinal pavement markings and all other pavement markings not specified to be performed plastic.

Unless otherwise specified, painted pavement markings will be paid for per the proposal, lump sum. Such payment shall be full compensation for furnishing and installing the item complete in place as described and specified.

797.2 PRE-FORMED PLASTIC PAVEMENT MARKINGS:

Pre-formed plastic pavement marking shall be in accordance with the Arizona Department of Transportation Standard Specifications, 1990 edition, Section 705 - Pre-formed Plastic Pavement Markings.

This item of work shall apply to all lane use arrows, all transverse pavement markings such as crosswalks and stop bar markings, and all pavement legend markings except those required for bicycle lanes.

Unless otherwise specified, pre-formed plastic pavement markings will be paid for per the proposal, lump sum. Such payment shall be full compensation for furnishing and installing the item complete in place as described and specified.

MAG UNIFORM STANDARD DETAILS FOR PUBLIC WORKS
CONSTRUCTION ARE HEREBY AMENDED TO INCLUDE THE FOLLOWING:

GENERAL:

All Portland Cement Concrete exposed to weather shall be a minimum of Class A concrete with 5 to 7% air entrainment. This requirement shall apply to all sidewalk, curb and gutter, driveways, and adjustment collars (water valves, manholes, survey monuments, etc.) as well as all other construction items that are exposed to weather. This change applies to concrete specified on the following M.A.G. Standard Details: 120-1, 120-2, 200, 202, 203, 206, 206-1, 206-2, 220, 221, 222, 230, 231, 232, 233, 234, 250, 251, 260, 261, 262, 263, 270, 321, 346, 391-1, 391-2, 501-1, 501-2, 501-3, 501-4, 501-5, 502-1, 502-2, 530, 531, 532, 533-1, 533-2, 534-1, 535, 550, and 552.

M.A.G. Detail No. 120-1 & 120-2 - Survey Marker

Revise to include the following notes to both details:

All survey caps shall be stamped with the registration number of the surveyor responsible for placing the monument.

The top of all survey caps placed in paved areas shall be at least 1/2" below pavement grade.

M.A.G. Detail No. 220 - Curb and Gutter - Types A,B,C & D

Revise all curb types to show that roadway widths are measured to the back of curb.

M.A.G. Detail No. 230 - Sidewalks

Revise detail to include addition of a minimum of three-inch thick ABC, as per Section 310, under all sidewalk.

M.A.G. Details No. 231, 232, 233 & 234 - Sidewalk Ramps - Type A,B,C, & D

Revise to include minimum three-inch thick ABC, as per Section 310, under all sidewalk ramps.

M.A.G. Detail No. 234 - Sidewalk Ramps - Type D

Modify to reduce the back of sidewalk elevation at the sidewalk ramps from 4 3/4" to 4" to conform with ADA requirements. A curb at back of sidewalk similar to Detail No. 232, shall be added to this detail with a top of curb elevation of 7".

M.A.G. Detail No. 240 - Valley Gutter

Detail No. 240 shall not be used. Revise to use City Detail 8-06-010.

M.A.G. Detail No. 250 & 251 - Driveway Entrances/Return Type Driveways

Revise these details so that the elevation of the driveway at the extended back of sidewalk shall be at least the adjacent curb height plus 1" above the gutter flow-line elevation unless specifically approved otherwise. Minimum three-inch thick ABC, as per Section 310, shall be added under all driveway entrances.

Revise to include the following notes:

For residences with two-car garages, the maximum width of driveway shall be 18 feet. For residences with three-car garages, the maximum width of driveway shall be 30 feet. Residential driveway access to Type I and II streets is prohibited.

Revise depth of concrete for commercial and industrial driveways to 8" minimum.

Revise depth of concrete for residential driveways to 6" minimum.

M.A.G. Detail No. 360 - Fire Hydrant Installation

Revise the detail notes to include:

The crushed rock under the fire hydrant shall be sized from a 3/4" minimum to 3" maximum. Volcanic cinders shall not be used.

The dimension from center of the pumper connection to ground line shall be a 18" minimum and a 24" maximum.

M.A.G. Detail No. 390 - Curb Stop with Flushing Pipe

Revise the detail to include the following note:

A 3/16" drain hole shall be drilled in the bottom ell of all flushing pipes.

M.A.G. Detail No. 420 - Pre-Cast Concrete Sewer Manhole

Delete the Note "*steps not required in 60" M.H.".

Revise to include the following:

Manholes with two or more inlets shall be 60" inside diameter.

Steps shall be installed in 60" manhole as per 48" manhole standard.

Steps in all manholes shall be placed so that the climber faces traffic and the steps are on the same side of the manhole that sewer pipe enters or exits the manhole.

All manhole steps shall be polypropylene.

All manhole frames and covers shall be aluminum. Agency name shall not be required on covers.

New manholes shall have a maximum neck height dimension of 26" when measured from finish grade to top of cone or bottom of flat top. Disregard conflicting neck dimensions.

The manhole base of all manholes shall be reinforced with #4 bars 8" on center, both ways placed 4" above sub-grade elevation.

A 1" vertical clearance shall be provided between the top of the sewer pipe and the bottom edge of all manhole barrel sections. A suitable radius shall be provided where the manhole floor joins the vertical edge of the invert channel.

M.A.G. Detail No. 421 - Offset Manhole For 8" to 30" Pipe

Delete the Note beginning "1:3 Cement...".

Revise to include the following note.

The manhole base shall be reinforced with #4 rebars 8" on center, both ways placed 4" above sub-grade.

M.A.G. Detail No. 422 - Sewer Manhole and Cover Frame Adjustment

Delete the notes beginning "1:3 Cement..." and "M.H. step in 48"...".

Revise to include the following notes.

Steps shall be installed in 60" manholes as per 48" manhole standard.

The manhole base shall be reinforced with #4 rebar 8" on center, both ways, placed 4" above sub-grade.

All manhole frame & cover adjustments shall be made in accordance with City of Flagstaff Detail 9-03-052.

M.A.G. Detail No. 426 - Drop Sewer Connections

Delete all references to "V.C.P." and replace with "P.V.C. or D.I.P."

M.A.G. Detail No. 427 - Stub-Out And Plugs

Delete all references to "V.C.P." and replace with "P.V.C. or D.I.P."

M.A.G. Detail No. 440 - Sewer Building Connection

Delete all references to "V.C.P." and replace with "P.V.C. or D.I.P."

Delete the two unnumbered notes beginning "2"x4" stake..." and replace each with the following note:

A #4 rebar shall be placed vertically at the end of the service for future location purposes. The rebar is to extend from the service line to 6" below finished grade. A brick shall be placed on the

surface and connected to the rebar with 12 ga. (min.) galvanized steel or a 12 ga. (min.) copper wire with green insulation.

M.A.G. Detail No. 441 - Sewer Clean-out

Delete references to "vitrified clay" or V.C.P. and replace with "P.V.C. or D.I.P."

Revise to include the following note:

Sewer Clean-outs shall be used on public sewers only when specifically allowed by the City Engineer.

CONCRETE RAMP JOINT REPAIR PROJECT

**EXHIBIT B – CIVIL TECHNICAL
SPECIFICATIONS**

CIVIL TECHNICAL SPECIFICATIONS

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ITEM P-100 CONTRACTOR QUALITY CONTROL

DESCRIPTION

100-1.1 GENERAL. This item shall consist of all work necessary to ensure quality control of the Contractor's work during construction in accordance the Civil Specifications.

The Contractor shall be responsible to conduct all quality control testing and inspections as indicated in the these specifications, and for each pay item, as well as any other test or inspection not specifically listed, but necessary to adequately control the work to the satisfaction of the City of Flagstaff. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall submit his plan for Quality Control Testing and Inspection as required per this specification for review and approval to the Engineer at least five (5) working days prior to the pre-construction conference.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

100-1.2 DESCRIPTION OF PROGRAM.

- a. **General Description.** The Contractor shall establish a Quality Control Program to perform inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.
- b. **Quality Control Program.** The Contractor shall describe the Quality Control Program in a written document that shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review at least 5 calendar days before the pre-construction conference.

The Quality Control Program shall be organized to address, as a minimum, the following items:

- a. Quality control organization;
- b. Project progress schedule;
- c. Submittals schedule;
- d. Inspection requirements;
- e. Quality control testing;
- f. Documentation of quality control activities, and;
- g. Requirements for corrective action when quality control and/or acceptance criteria are not met.

The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

100-1.3 QUALITY CONTROL ORGANIZATION. The Contractor Quality Control Program shall be implemented through the Contractor's quality control organization.

100-1.4 PROJECT PROGRESS SCHEDULE. The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as a network diagram in Critical Path Method (CPM), PERT, or other format, or as otherwise specified in the contract. As a minimum, it shall provide information on the sequence of work activities, milestone dates, and activity duration.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

100-1.5 SUBMITTALS SCHEDULE. The Contractor shall submit a detailed listing of all submittals (e.g., mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

- a. Specification item number;
- b. Item description;
- c. Description of submittal;
- d. Specification paragraph requiring submittal; and
- e. Scheduled date of submittal.

100-1.6 INSPECTION REQUIREMENTS. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by Section 100-07.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

- a. For material production, quality control test results and periodic inspections shall be utilized to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment utilized in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized.
- b. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment utilized in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

100-1.7 DOCUMENTATION. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

100-1.8 SURVEILLANCE BY THE ENGINEER. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of



materials, equipment and work in place shall be subject to surveillance by the Engineer at the site for the same purpose.

Surveillance by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

100-1.9 NONCOMPLIANCE.

a. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his/her authorized representative to the Contractor or his/her authorized representative at the site of the work, shall be considered sufficient notice.

b. In cases where quality control activities do not comply with either the Contractor Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

- (1) Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.
- (2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-2.1 GENERAL. Contractor Quality Control shall be measured for payment by the lump sum as a single complete unit of work.

BASIS OF PAYMENT

100-3.1 Payment for the performance of the Contractor Quality Control work as specified above will be made at the contract lump sum price for the item Mobilization/Demobilization. The costs for work under this item include furnishing all technicians, inspectors, testing equipment and field vehicles.

Payment will be made under;

Item P-100 Quality Control – per Lump Sum

END OF ITEM P-100

ITEM P-101 MOBILIZATION/DEMOBILIZATION

DESCRIPTION

101-1.1 GENERAL. Mobilization/Demobilization shall consist of preparatory work and operations, including but not limited to, furnishing, installing, locating of staging area(s), temporary utilities, the movement of personnel, equipment, materials, supplies and incidentals to the project site, and for transportation of quality control personnel, laboratory field testing equipment and tools, testing supplies, barricades, haul roads and other facilities necessary to complete the work on the project including. This item is for other work and operations that the Contractor must perform or costs he must incur before beginning work on the project, and for necessary work and costs in completing the construction and demobilizing from the site.

Demobilization costs will include, but not be limit to: removal of temporary utilities to the staging area(s) removal of temporary field offices, materials, barricades, equipment and the clean up and restoration of the construction staging area(s).

101-2.1 STAGING AREAS LOCATIONS. The proposed staging area location is shown on the plans. These areas may be used for the Contractor's operations, and at the Contractor's option. The staging shall be kept in a neat and orderly condition at all times. Stockpiled materials in the staging area(s) shall be kept below all Federal Aviation Requirements.

Equipment shall only be parked in retracted and lowered condition. The Engineer reserves the right to direct the Contractor to correct any deficiencies in the maintenance of the staging yard and the Contractor shall promptly comply with the directives of the Engineer.

101-2.2 SPECIAL REQUIREMENTS OF STAGING AREA(S). Due to the close proximity of the airport and the traveling public, the following special requirements shall be adhered to:

a. Temporary Security Fencing and Gates. At the Contractor's option, the staging area(s) may be secured with chain link fence and gates.

b. Obstruction Lighting. Equipment of significant height shall be required to have red obstruction lights provided and maintained by the Contractor. The red obstruction lights shall be 100-watt fixtures, with 360-degree beam spread, in compliance with the Federal Aviation Administration (FAA) specification AC 150/5345-43, L-810.

c. Dust Control. The Contractor shall use all measures to control dust from equipment, and storage piles. Uncontrolled dust from the staging areas shall be grounds for suspension of operation until remedial measures are undertaken. The Contractor shall address dust control of the staging area in the dust control plan prior to commencing operations. Sweeping equipment must be equipped and maintained by the Contractor such that excessive dust is not emitted while operating.

d. Protection and Restoration of Staging Area. The Contractor shall be responsible for all damage or injury to property of any character. The Contractor shall protect all existing utilities, fencing, and other facilities at the Airport.

e. Mobile Telephones. The Contractor's and each subcontractor's on-site superintendent, and foremen shall have mobile telephones. The mobile telephone numbers shall be provided to the Airport Manager and the Engineer.

101-2.3 BARRICADES. For each phase of the project, the contractor shall delineate the area of work as shown on the plans with low profile barricades. The barricades shall be placed so that they do not violate the Taxiway Safety Area as defined by the FAA advisory Circular AC150/5300-13. Barricades shall be of the type as shown on the plans.

METHOD OF MEASUREMENT

101-3.1 Mobilization/Demobilization shall be measured for payment by the lump sum as a single complete unit of work.

BASIS OF PAYMENT

101-4.1 Payment for the performance of the Mobilization/Demobilization work as specified above will be made at the contract lump sum price for the item Mobilization/Demobilization. Mobilization/Demobilization shall not exceed eight (8) percent of the total amount bid for each Schedule awarded.

This item shall include the movement of all personnel, all equipment, the establishment of all haul roads, temporary utilities for the staging area and temporary utilities, restoration and protection of the site(s), safety, providing and for maintaining temporary security fence and gates. Partial payments under this item will be made in accordance with the provisions of Table 1.

TABLE 1 – Payment Schedule for Mobilization/Demobilization

Mobilization/ Demobilization Payment Number	Percent Payment	Partial Payment Requirements
1	25% of Lump Sum Amount	After the pre-construction conference provided that submissions required are provided to the satisfaction of the Engineer and the Engineer Field Office are functional with equipment and supplies and the Critical Path Method schedule has been submitted. The first payment for mobilization/demobilization shall be contingent upon the Engineer receiving the Quality Control Program at least five (5) working days before the pre-construction conference.
2	25% of Lump Sum Amount	When the Engineer has determined that a significant amount of equipment has been mobilized to the project site which will be used to perform the Contract work. The second payment for mobilization/ demobilization shall be contingent upon the Contractor submitting the revised Quality Control Program to the Engineer for review and approval.
3	25% of Lump Sum Amount	On the first progress payment application following completion of five (5) percent of the bid amount.
4	25% of Lump Sum Amount	On the first progress payment application following completion of ten (10) percent of the bid amount.

Payment will be made under:

Item P-101-4.1 Mobilization/Demobilization (Not to Exceed 5% each schedule awarded) – per lump sum

END OF ITEM P-101

ITEM P-511 PARTIAL DEPTH PATCHING AND JOINT REPAIR OF RIGID PAVEMENT

DESCRIPTION

511-1.1 This consists of partial depth patching of concrete pavement with Portland cement concrete, mortar and grout and joint repair using rapid setting epoxy resin in accordance with these specifications and details shown on the drawings.

MATERIALS

511-2.1 RAPID SETTING JOINT REPAIR MATERIAL. Rapid setting epoxy joint repair material shall be used for the repair of concrete pavement joints as shown in the plans. The material shall be certified to be compatible with the existing aggregates in the paving. The material shall have a minimum compressive strength of 3,000 psi at 24 hours and 5,000 psi at 28 days. The method of bonding, placing and curing shall be as recommended by the manufacturer in his printed instructions. Approved materials for use include Delpatch Elastomeric Concrete manufactured by DS Brown, ElastoPatch manufactured by Watson Bowman Acme or approved equal.

511-2.2 PORTLAND CEMENT. ASTM C 150 Type I, II or III.

511-2.3 WATER. Clean and free from oil, acid, salt alkali, sugar, organic matter or other deleterious substances. Potable water may be accepted for use without testing. Water that is of questionable quality shall be subject to the acceptance criteria of ASM C 94.

511-2.4 COARSE AGGREGATE. Crushed stone or crushed gravel conforming to ASTM C33 except as otherwise modified herein. Aggregate shall be clean, hard, unweathered, uncoated and non-reactive. Abrasion loss shall not exceed 40 percent when tested in accordance with ASTM C 131 and the maximum allowable percentage for clay lumps and friable particles shall be 1.5 percent. Except as otherwise approved by the Designer, coarse aggregate when tested in accordance with ASTM C 136 shall conform to the following gradation:

<u>Sieve Designation</u>	<u>Percentage by Weight Passing Sieves</u>
¾ inch	100
½ inch	90-100
3/8 inch	40-70
No. 4	0-15
No. 8	0-5

511-2.5 FINE AGGREGATE. Natural sand, manufactured sand, or a combination thereof, conforming to ASM C 33, shall be used for Portland cement concrete mixtures. Aggregate gradations for epoxy concrete or mortar shall comply with recommendations of the epoxy manufacturer.

511-2.6 ADMIXTURES.

- a. **Air Entraining Admixture:** ASTM C 260.
- b. **Chemical Admixtures:** ASTM C 494. Where not shown or specific, the use of admixtures is subject to written approval of the Engineer.

511-2.7 CURING FOR PORTLAND CEMENT CONCRETE

- a. Burlap: AASHTO M 182
- b. Liquid Membrane Forming Compound: ASTM C 309, Type 2, Class B.

511-2.8 JOINT SEALANT. Sealers shall be as indicated on the drawings and as specified in P-607S.

MIX DESIGN

511-3.1 CONCRETE MIX DESIGN. Submit proposed concrete mix design for approval by Engineer prior to placement. The mix design shall indicate the weight of each ingredient of the mixture, aggregate gradation, slump, air content, water-cement ratio, and 7-day compressive strength test results. Include a complete list of materials including admixtures, applicable reference specifications and brand names. No deviation from the approved mix design will be permitted without prior approval.

511-3.2 PORTLAND CEMENT CONCRETE. Design the concrete mixture to produce a minimum compressive strength of 3,000 psi at 24 hours and 5,000 psi at 28 days of age, determined in conformance with ASTM C 39. Provide an air content by volume of 4 ½ percent, plus or minus 1 ½ percent, based on measurements made on concrete immediately after discharge from the mixer in conformance with ASTM C 231. The range of the slump shall be ½ to 2 inches when tested in accordance with ASTM C 143 except that maximum slump may be increased to 4 inches when the Contractor has included an approved high range water-reducing admixture conforming to ASTM C 494, Type F, in the approved mix design. To minimize drying shrinkage, the water-cement ratio by weight shall be 0.45 or less.

511-3.3 BONDING COURSE. The bonding course shall be sand-cement grout or an approved alternate.

- a. The sand-cement bonding course shall consist of equal parts of Type I, II or III Portland cement and sand by dry weight, thoroughly mixed with water to yield a thick, creamy mixture. The sand shall meet the requirements of the fine aggregate specified herein, except 100 percent shall pass a 2.36 mm (No. 8) sieve.

511-3.4 SAND-CEMENT MORTAR. The mortar shall consist of one part Type I, II or III Portland cement and two parts sand by dry weight, thoroughly mixed with water to yield a suitable mix. The water-cement ratio shall not be greater than 0.45 by weight. The sand shall meet the requirements of the fine aggregate specified herein.

CONSTRUCTION METHODS

511-4.1 WEATHER LIMITATIONS. Do not place patch materials when weather conditions may detrimentally affect the quality of the finished product. Do not place any repair materials when the repair surface is wet or moist, or when the air temperature is below 50 degrees F in the shade except as recommended by the manufacturer of the materials and as approved by the Designer. When air temperature is likely to exceed 90 degrees F, Portland cement repair materials shall have a temperature not exceeding 90 degrees F when deposited. Epoxies and other rapid setting materials shall be placed in accordance with the manufacturer's printed instructions and weather limitations.

511-4.2 EQUIPMENT. Assemble dependable and sufficient equipment before the start of pavement repairs to permit thorough inspection, calibration of weighting and measuring devices, adjustments of parts and the making of any equipment repairs that may be required. Maintain the equipment in good working condition.

511-4.3 SCOPE OF WORK. The approximate location and size of spalls and patch replacements to be repaired are indicated on the plans. Prior to starting repairs, the Engineer will mark in the field the exact location and size of each spall, patch replacement and map cracking area to be patched.

511-4.4 DELIVERY AND STORAGE OF MATERIALS.

- a. **Cementitious Materials.** Furnish in bulk, suitable bags or containers. Store and protect in a weather tight manner to prevent absorption of moisture and in accordance with manufacturer's instructions.
- b. **Aggregates.** Handle and store aggregates in a manner to avoid breakage, segregation or contamination by foreign materials. Do not mix or store aggregates from different sources in same stockpile nor use alternatively in same concrete mix.

511-4.5 PREPARATION.

- a. **Preparation of Spalled Surfaces.** In the area to be patched, remove existing concrete to a minimum depth of 2 inches below the pavement surface and to such additional depth where necessary to expose a surface of sound, unweathered concrete that is uncontaminated by sealants, oils, greases, or deicing salts or solutions. Make a vertical saw cut at least 2 inches deep and approximately 2 inches outside of the area needing repair. Remove concrete with light, hand-held, high frequency chipping hammers weighing not more than 15 pounds or other approved light hand tools. Do not use jack hammers weighing more than 15 pounds nor pavement breaker devices mounted on or pulled by mobile equipment. Clean the cavity surface by sandblasting, blowing with compressed air, sweeping and vacuums. Use sandblasting to remove all traces of sealer, oils, grease, rust and other contaminants.
- b. **Existing Dowels, Tie Bars and Reinforcement.** Clean to bare metal by sandblasting any existing reinforcement or dowels exposed in the repair area. Exposed dowels shall be neatly coated with an approved bond breaking material prior to placing patch materials.
- c. **Bonding Course.** Immediately prior to placing the patch material, clean the previously prepared surfaces with a high pressure air jet, brushing and vacuum to remove all loose and foreign material. Coat the clean and dry surface including sawed faces not at joints with a thin coat of bonding material. Except as otherwise recommended by the manufacturer, place the bonding material just prior to placement of patch material and scrub with stiff bristle brushes to fill a voids and crevices in the spall cavity surface. The patch material must be placed before the bond course dries or sets. Remove dried or hardened bond material by sandblasting and re-coat the cavity with fresh bond course before placing concrete patch material.
- d. **Patch Replacement.** In the area of existing patches to be removed and replaced, remove existing concrete to a minimum depth of 2 inches below the pavement surface and to such additional depth where necessary to expose a surface of sound, unweathered concrete that is uncontaminated by sealants, oils, greases, or deicing salts or solutions. Make a vertical saw cut at least 2 inches deep and approximately 2 inches outside of the area needing repair. Remove concrete with light, hand-held, high frequency chipping hammers weighing not more than 15 pounds or other approved light hand tools. Do not use jack hammers weighing more than 15 pounds nor pavement breaker devices mounted on or pulled by mobile equipment. Clean the cavity surface by sandblasting, blowing with compressed air, sweeping and vacuums. Use sandblasting to remove all traces of sealer, oils, grease, rust and other contaminants.

511-4.6 BATCHING AND CONVEYANCE. Provide facilities for the accurate measure and control of each of the materials entering the concrete, mortar, or grout patching material. Mixing equipment shall be capable of combining the aggregate, cement, admixture and water or other approved patch materials in a uniform mixture and discharging this mixture without segregation.

The proportions of materials entering into the patch mixture shall be in accordance with the approved mix design or manufacturer's printed instructions. Revise the mix design whenever necessary to maintain the workability, strength and standard of quality required and to meet the varying conditions encountered during construction; however, no changes shall be made without prior approval by the Designer.

Convey patch material from mixer to repair areas as rapidly as practicable by methods that will prevent segregation or loss of ingredients.

511-4.7 SAMPLING. Provide facilities for readily obtaining representative samples of aggregate and patch mixtures for test purposes. Furnish necessary platforms, tools and equipment for obtaining samples. The Contractor's Quality Assurance testing laboratory will sample the concrete repair material a minimum of once per days production and provide the Quality Control Report to the Engineer. Concrete not meeting the specified compressive strength shall be removed and replaced. The Contractor shall be responsible for sampling and testing any early breaks to open an area to traffic.

511-6.5 PRODUCT/WORKMANSHIP WARRANTY. The Contractor shall furnish a separate extended full warranty covering concrete repair installation (labor) performance for a period of one (1) year becoming effective the date of final acceptance. The cost of these extended warranties shall be considered incidental to the cost of the various pay items of this specification. The warranty shall be submitted to the Owner prior to the Owner submitting payment of the final (project closeout) pay request to the Contractor. Failure to obtain and furnish the full warranty will result in the Owner withholding final payment until such warranties are submitted to the Owner.

METHOD OF MEASUREMENT

511-5.1 Partial depth pavement patching and joint spall repair using epoxy shall be measured by the number of square feet placed, completed and accepted.

BASIS OF PAYMENT

511-6.1 PAYMENT. Payment for partial depth patching and spall repair shall be made at the contract unit price per square foot for patching and per linear foot for spall repair, respectively, and shall be full compensation for all labor, materials, tools, equipment and incidentals required to complete the work as specified herein and on the drawings.

b. Payment. Payment shall be made under:

Item P-511-6.1a Partial Depth Patching -- per square foot

Item P-511-6.1b Joint Spall Repair Using Epoxy — per linear foot

END OF ITEM P-511

ITEM P-607S

SEALING AND RESEALING OF JOINTS AND CRACKS IN RIGID PAVEMENT USING SILICONE SEALANTS

DESCRIPTION

607S-1.1. This item shall consist of cleaning and preparation of existing joints and providing silicone joint sealant capable of effectively sealing the joints. When indicated, existing cracks shall be cleaned and sealed, similar to joints as specified. The work shall be as show on the plans or as directed by the Engineer.

MATERIALS

607S-2.1. CRACK SEALANT. Crack sealing materials shall meet the requirements of a low modulus self-leveling sealant meeting the requirements of ASTM D 5893 (Dow Corning 890-SL or approved equivalent), cold applied.

Each lot or batch of sealing compound shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this specification.

607S-2.2 JOINT SEALERS. Joint sealing materials shall meet the requirements of the following:

a. Concrete Pavement Construction and Expansion Joints. A low modulus silicone sealant, cold applied, in conformance with ASTM D 5893 (Dow Corning 888 or approved equal).

b. Bituminous - Concrete Pavement Interface Joint. A self-leveling silicone sealant, cold applied, in conformance with ASTM D 5893 (Dow Corning 890-SL or approved equal).

c. Each lot or batch of sealing compound shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the compound meets the requirements of this specification. The material shall be stored out of the weather, in original tightly-sealed containers, as recommended by the manufacturer. Storage temperature shall be at or below ninety (90) degrees Fahrenheit.

The manufacturer of the preformed joint seal shall certify that the seal will exert a minimum pressure of three (3) pounds per square inch when compressed to eighty (80) percent of the nominal width and a maximum of twenty-five (25) pounds per square inch when compressed to fifty (50) percent of the nominal width.

The cold applied silicone sealants shall meet the following requirements:

<u>TEST</u>	<u>LOW MODULUS SILICONE SEALANT REQUIREMENTS</u>	<u>SELF-LEVELING SILICONE SEALANT REQUIREMENTS</u>	<u>TEST METHOD</u>
<u>AS SUPPLIED</u>			
Extrusion Rate, grams per minute	90-250	275-550	MIL-S-8802
Specific Gravity	1.450-1.515	1.26-1.34	ASTM D 1475
Skin over Time, minutes	10 (max)	60 (max)	CTM 0098
<u>UPON COMPLETE CURE</u>			
Joint Modulus, psi (at 150% elongation)	45 (max)	9 (max)	ASTM D 3581
Adhesion to Asphalt or Concrete, minimum percent elongation	500 (min)	600 (min)	ASTM D 3581
Elongation, percent	1200 (min)	1400 (min)	ASTM D 412, DIE C, Modified
<u>PERFORMANCE</u>			
Movement, 10 cycles @ + 100/-50 percent	No Failure	No Failure	ASTM C 719
Accelerated weatherly 5,000 hours	No cracks, blisters or bond loss	No cracks, blisters or bond loss	ASTM C 793

607S-2.3 BACKER ROD. Backer rod blocking media shall be compressible, non-shrinkable, non-moisture absorbing, non-reactive with silicone joint sealant and shall be a non-absorbent material such as polyethylene closed cell foam. The minimum diameter of the backer rod shall be 25 percent larger than the field joint width.

607S-2.4 SEPARATING TAPE. Separating tape shall be polyethylene or polyester tape, 3 mil minimum thickness, or masking tape, rubber tape or other barrier sheet that is non-reactive, non-absorptive and flexible. Tape shall be adhesive backed, width to match nominal width of the joint or crack reservoir. Provide tape that joint sealant will not bond to.

EQUIPMENT

607S-3.1 GENERAL REQUIREMENTS. Furnish all equipment, tools and accessories necessary to prepare and clean existing joints and cracks and install joint sealants. Machines, tools and equipment used in the work shall be approved by the Owner before the work is started and shall be maintained in proper working conditions at all times.

607S-3.2 CONCRETE AND BITUMINOUS PAVEMENT SAWING. The Contractor shall provide a self propelled power saw for cutting joints to the specified widths and depths and for removing filler embedded in the joints or adhered to joint faces. The face of the saw cut shall be ninety (90) degrees to the pavement surface. If spalling occurs due to the sawing operation, it must be repaired prior to sealant installation. The longitudinal saw-cut operation shall not be performed until the pavement is determined to be level from one slab to the next. Joints shall not vary more than 1/2 inch (13 mm) from their designated position and shall be true to line with not more than 1/4-inch (6 mm) variation in 10 feet (3 m). The surface across the joints shall be tested with a 10-foot (3 m) straightedge as the joints are finished and any irregularities in excess of 1/4 inch (6 mm) shall be corrected before

the concrete has hardened. All joints shall be so prepared, finished, or cut to provide a groove of uniform width and depth as shown on the plans.

607S-3.3 SEALANT ROUTING TOOL. To remove old sealant from joints, provide routing tools of various sizes to suit the varying joint widths and removal depths required. The tool shall be narrower than the existing joint being cleaned, and shall not strike and damage the sides of the joints. The cleaning tool shall be rectangular in shape and shall be mounted to allow lateral and vertical movement to avoid spalling the concrete. V-shaped or tapered tools, or rotary impact routing devices will not be permitted. The equipment shall be capable of maintaining accurate and uniform cutting depth and width control. Any tool or cleaning method that chips, spalls, or damages concrete edges or joints will not be allowed. Any joints or concrete damaged by cleaning operations shall be promptly repaired by methods approved by the Owner at the sole expense of the Contractor.

607S-3.3 HAND TOOLS. When approved, hand tools such as brooms and chisels may be used in small or equipment inaccessible areas for removing old sealant from joints and cracks and cleaning the groove faces.

607S-3.4 SILICONE SEALANT EQUIPMENT. Equipment shall be a type recommended and approved by the manufacturer of the silicone sealant.

SUBMITTALS

607S-4.1. SUBMITTALS. No installation of materials will be allowed until all submittals have been received and accepted.

- a. **Manufacturer's Catalog Data and Instructions.** Submit copies of manufacturer's catalog data and recommendations for material installation and equipment use.
- b. **Equipment List and Statements.** Submit a list and description of the sealant installation equipment including model and serial number to be used and a statement from the supplier of the joint sealant that the proposed equipment is acceptable for installing the specified sealant.

CONSTRUCTION METHODS

607S-5.1 DELIVERY AND STORAGE. Joint material shall be delivered in original sealed containers and shall be protected from freezing or overheating. Provide jobsite storage facilities capable of maintaining temperature ranges within manufacturer's recommendations.

607S-5.2 WEATHER LIMITATIONS. Do not proceed when weather conditions detrimentally affect the quality of cleaning or preparing joints or cracks and applying sealants. Apply sealants only if the pavement temperature is at least 50 degrees F and sealant reservoirs are dry and clean. Materials shall be protected from moisture.

607S-5.3 JOINT AND CRACK AND PREPARATION. Unless otherwise indicated, saw, clean and resal joints. Do not proceed with final cleaning by more than one working day in advance of sealing operations. Clean the joints by removing the existing sealant compound, sealants, dirt and other foreign material with the equipment specified herein, but not limited thereto. Cleaning procedures which damage pavements, joints or patches by chipping or spalling will not be permitted. All existing joint sealant shall be removed. Precise shape and size of joints vary and the condition of joint walls and edges vary. Except as otherwise indicated, cracks shall be routed, cleaned and sealed similar to that specified for the joints.

- a. **Removal of Existing Material.** Remove the joint faces major portion of the existing sealants by using the specified routing tool. After cutting free the existing sealant from both joint faces, remove all existing sealant within the sealant reservoir. At the completion of routing operations, clean the pavement surface with a vacuum sweeper and clean the joint opening by blowing with compressed air. Protect previously cleaned joints from being contaminated by subsequent cleaning operations.
- b. **Re-facing of Joints.** When required to widen or re-shape the joint space to the width, depth and configuration shown on the plans, reface concrete joint walls. Re-facing shall be done by a power-driven concrete saw specified herein to remove all residual sealant and a minimum of concrete and required groove widths, depths and shapes as needed to accommodate the bond breaking material and to maintain the specified depth of the new sealant to be installed. Immediately after sawing each joint, thoroughly clean the saw cut and adjacent concrete surface. Sand blast and air blast with compressed air until all dust and debris are removed from the joint. Protect adjacent previously cleaned joint spaces from receiving debris during the cleaning operations.
- c. **Preparation of Cracks.** Random cracks shall be routed, grooved, or sawed to a width of 1/2 inch plus or minus 1/16 inch and a depth of 1-1/4 inch plus or minus 1/16 inch. Existing crack sealant shall be removed and the crack cleaned as specified for existing joints. The cracks or joints currently supporting vegetation shall be treated with a commercially available herbicide mixed at an approved rate.
- d. **Final Cleaning of Joints and Cracks.** Following removal of existing sealant, and immediately before resealing, thoroughly clean the joints and cracks by sandblasting until all concrete surfaces in the reservoir space are free of sealants, dust, dirt water, moisture and any other foreign materials which would prevent bonding of new sealants to the concrete. Use sand particles of the proper size and quality for the work. Perform sandblasting with the specified nozzles, air compressor and other appurtenant equipment. Make as many passes of the sandblast nozzle along the joint as required for proper cleaning. Immediately prior to sealing the joint or crack, blow out the reservoir space with compressed air until completely free of sand, water and dust. Joints and cracks shall be clean and free of any moisture that may be harmful or injurious to the sealant before installation.

607S-5.4 BOND BREAKER. At the time joints receive final cleaning and are dry, install bond breaker material as indicated with a steel wheel or other approved device. Any backer rod or separating tape that is wetted by rain or water from any source shall be dried or replaced before installing sealant.

- a. **Blocking Media.** When the existing sealant has been removed to a depth greater than required, plug or seal off the lower portion of the groove by installing the specified backer rod.
- b. **Separating Tape.** When the existing sealant has been removed to the depth indicated and the bottom of the joint opening has been formed by saw cuts, insert the specified tape to prevent contact of the newly installed sealant with the existing sealant, joint filler or groove bottom.

607S-5.5 RATE OF PROGRESS. The final stages of joint preparation, which include placement of bond breakers, shall be limited to only that lineal footage of joint that can be resealed during the same workday.

607S-5.6 DISPOSAL OF DEBRIS. Clean the pavement surface to remove excess joint material, saw cuttings, dirt, water, sand and other debris by vacuum sweepers or hand brooms. Remove the debris immediately to a point off airport property.

607S-5.7 PREPARATION OF SEALANT.

- a. **Silicone Type.** Silicone sealants shall be pumped directly from the original drum or container into the sealant reservoir by use of an air powered pump. Sealant preparation shall conform to the sealant manufacturer's recommendations.

607S-5.8 INSTALLATION OF SEALANT.

- A. **Time of Application.** Seal the joints and cracks immediately following the final cleaning and placing of the bond breakers. Commence sealing the joints when the walls of the concrete joint are clean, dust free and dry and when both the atmospheric temperature and pavement temperature within the joint opening are above 50 degrees F. If the above conditions cannot be met, or if rains interrupt sealing operations, re-clean and dry the open joints prior to installing the sealant.

- B. **Sealing the Joints.** Do not install the sealant until the joints to be sealed have been inspected and approved. Install bond breaker just prior to placing sealant. Fill the joints with sealant from the bottom up until the joints are uniformly filled solid from bottom to the recessed top. Fill the joints to the dimensions and within the tolerances shown, and without formation of voids or entrapped air. Tool the sealant immediately after application to provide firm contact with the joint walls and to form the indicated sealant profile below the pavement surface. Check the sealed joints frequently to assure that the newly installed sealant is cured to a tack- Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer before sealing is allowed. Prior to commencing full production of any joint sealant installation, a qualified representative from each joint sealant manufacturer shall visit the project and observe the installation methods and means of the Contractor. Each manufacturer's representative shall work with the Contractor to establish proper and suitable installation techniques (including the installation equipment, labor, and all installation, handling, and storage of the sealant materials) prior to commencing full production of the joint sealant work. Upon determining the Contractor's installation techniques are satisfactory, each manufacturer's representative shall submit a certified letter stating that the material is being installed in total compliance with each respective manufacturer's recommended installation technique(s) to produce a joint seal capable of satisfactory performance, with no maintenance, for a five (5) year period. There shall be no payment for any joint sealed prior to receipt by the Owner of the Manufacturer's certification. Any cost associated with the site visits of, or consultations with such representative shall be incidental to the cost of the concrete pavement. Pavement sealants shall be installed in accordance with the following requirements:

- a. **Cold Applied Sealants.** Cold applied joint sealing compound shall be applied by means of pressure equipment that will force the sealing material to the bottom of the joint and completely fill the joint without spilling the material on the surface of the pavement. A backing material shall be placed as shown on the plans and shall be both non-reactive and non-adhesive to the concrete or the sealant material. Sealant that does not bond to the concrete surface of the joint walls, contains voids, or fails to set to a tack-free condition will be rejected and replaced by the Contractor at no additional cost. Before sealing the joints, the Contractor shall demonstrate that the equipment and procedures for preparing, mixing, and

placing the sealant will produce a satisfactory joint seal. This shall include the preparation of two small batches and the application of the resulting material. Any sealant spilled on the surface of the pavement, structures and/or lighting fixtures, shall be removed immediately.

607S-5.9 CLEANING PAVEMENT. After a joint or crack has been sealed, all surplus sealant or other residue on the pavement surface shall be promptly removed.

607S-5.10 TRAFFIC CONTROL. During the protection and curing period recommended by the manufacturer, do not permit vehicular traffic or equipment in the area of the joints. At the end of the curing period, light traffic may be permitted on the pavement if approved by the Engineer.

607S-5.11 PRODUCT/WORKMANSHIP WARRANTY. The Contractor shall furnish a separate extended full warranty covering each joint seal material and installation (labor) performance for a period of five (5) years becoming effective the date of final acceptance. The extended warranties shall be issued jointly by the subcontractor responsible for the joint sealant work (if different from the Prime Contractor on this project) and the particular sealant manufacturers. The Extended Warranty shall include the specific wording identified separately in the bidding package provided. The cost of these extended warranties shall be considered incidental to the cost of the concrete pavement. The extended warranty shall be submitted to the Owner prior to the Owner submitting payment of the final (project closeout) pay request to the Contractor. Failure to obtain and furnish the extended full warranty will result in the Owner withholding final payment until such warranties are submitted to the Owner.

The pavement joint sealants shall continuously provide a watertight, resilient, and durable (no cracking, blistering, bubbling, or loss of bond to pavement joint walls) seal capable of maintaining these properties under repeated traffic and various weather conditions. The following list of criteria shall constitute the definition of joint sealant material and installation defects and/or failures over the life of any warranty period.

Failure/Defect

1. Failure to prevent water from infiltrating pavement joint.
2. Failure to prevent the intrusion of incompressibles into the joint.
3. Failure to maintain bond, or in the case of compressible sealants, suitable contact, with sidewalls of the pavement.
4. Material that cracks, splits, bubbles, or blisters shall be considered defective.
5. Material that fails to remain resilient and capable of rejecting incompressibles at all pavement temperatures shall be considered defective.
6. Material that is picked up by, or spread on adjacent horizontal pavement surfaces by, tires, rubber tired vehicular traffic, or the action of a power vacuum rotary brush pavement cleaning equipment, after the specified cure period shall be considered defective.
7. Silicone material that remains or otherwise becomes tacky and allows the adherence of dust, dirt, small stones, or other similar contaminants shall be considered defective.

All pavement joint sealants exhibiting one or more of these characteristics shall be deemed unsatisfactory and therefore shall not be in conformance with any warranty performance requirements. Any pavement panel joint exhibiting any one or more of the failure/defect characteristics listed shall be replaced under warranty when the aggregate quantity of those defects occur over 8% or more of the panel joint length. The Owner will inspect the

joints at least semi-annually to record conditions. Should the aggregate length of defective joint reach 8% of its panel length, warranty repairs/replacement will be required within forty-five (45) calendar days or as soon thereafter as weather conditions permit. The Owner reserves the right to make temporary emergency repairs to prevent water intrusion and/or further significant deterioration without invalidating the warranty. Pavement joints exhibiting these characteristics shall be removed and replaced in a satisfactory manner at no additional cost to the Owner.

Prior to final acceptance of any work under this item, the Engineer and Contractor shall perform a final inspection walk through jointly to determine if all installation is acceptable and meets the requirements set forth in this section.

METHOD OF MEASUREMENT

607S-6.1 Resealing of joints and sealing of cracks using silicone sealant shall be measured by the linear feet of sealed and resealed joints and cracks in place, complete and accepted.

BASIS OF PAYMENT

607S-7.1 Payment for joint resealing shall be made at the contract unit price per linear foot for each type, Type I and Type II. Payment for crack sealing shall be made at the contract unit price per linear foot. The price shall be full compensation for all cleaning, preparation and disposal work, for furnishing all materials, and for all labor, equipment, tools and incidentals necessary to complete all work in this section.

Payment will be made under:

- Item P-607S-7.1a Reseal Joints Using Silicone Sealant – Type I - Per linear foot
- Item P-607S-7.1b Reseal Joints Using Silicone Sealant – Type II - Per linear foot
- Item P-607S-7.1c Seal Cracks Using Silicone Sealant - Per linear foot.

END OF ITEM P-607S

ITEM M-003 AIRPORT SAFETY AND SECURITY

DESCRIPTION

003-1.1 GENERAL. The Contractor shall be required to carry out his operations in a manner that will cause a minimum of interference with air traffic, and shall be required to cooperate with the FAA, the City of Flagstaff, the airlines, and other Contractor's that may be working in the area. All work shall be completed in accordance with the phasing plans, the FAA Advisory Circular 150/5370-2E and the Special Provisions of these Contract Documents.

The Contractor shall complete the Airport Construction Safety Plan as contained within the specifications with information applicable to the Contractor's specific personal and means and methods of completing this project.

The Contractor shall be required to hold weekly airfield coordination meetings with the City of Flagstaff Operations. Additionally, the Contractor shall meet with Operations prior to the start of each shift to discuss the day's anticipated work activities.

All vehicles shall have flashing yellow lights in accordance with the Special Provision Specifications.

The Contractor shall be required to supply, place, maintain, move and store the items listed herein, as appropriate, to facilitate construction and protect air traffic and to keep on site an adequate extra supply of these items.

MATERIALS

003-2.1 RED WARNING LIGHTS. Red warning lights shall be flashing red lights meeting the requirements of the "Manual on Uniform Traffic Control Devices for Streets and Highways" for Type A and Type B flashers.

003-2.2 WARNING MARKERS. Warning markers shall be the type and size detailed on the plans. Markers shall be equipped with a red warning light per paragraph 003-2.1.

003-2.3 LOW LEVEL BARRIERS. Low level barriers shall be the Airport Runway Safety Barricade Model AR-2 Multi-Barrier as manufactured by Off The Wall Products, LLC, or approved equal. The AR-2 low level barrier sections shall be eight (8) feet long and ten (10) inches high. Sections shall be interlocking and shall be ballasted to prevent damage from jet blast. Each barricade section shall be equipped with a Model: SL-H867R Solar Powered Safety lights as manufactured by Leotek Electronics USA Corp., or approved equal. The barriers shall be furnished, maintained and relocated during each phase by the Contractor.

003-2.4 VACUUM SWEEPER. Vacuum Sweeper shall be Tymco, Model HSP-600 or Elgin Model crosswind or approved equal.

003-2.5 SECURITY CHECK POINTS AND CONTROLLED CROSSINGS. Provide as shown on the plans and as detailed within this specification, the items necessary to control crossings at active taxiways. These items may include traffic control devices or handheld traffic signals.

RESPONSIBILITIES

003-3.1 CONTROL REQUIREMENTS. The Contractor's responsibilities for work areas are as follows:

- 1) The Contractor shall be held responsible for controlling his employees, subcontractor's, and their employees with regard to traffic movement.
- 2) The Contractor shall rebuild, repair, restore, and make good at his own expense all injuries or damages to any portion of the work occasioned by his use of these facilities before completion and acceptance of his work.
- 3) The Contractor shall submit to the Engineer in writing a detailed work plan for each construction phase. This plan shall be submitted 14 calendar days prior to the start of each construction phase. No work within the construction phase may commence until the phase work plan has been reviewed by the City of Flagstaff and returned to the Contractor and marked as "no exceptions taken" or "make corrections noted."
- 4) The Contractor shall submit to the Engineer in writing a plan, by construction phase, for controlling construction equipment and vehicular movements in the Air Operations Area (AOA). This plan shall be submitted at the preconstruction conference. No work may commence until this plan has been reviewed and marked as "no exceptions taken" or "make corrections noted." The Plan must include material haul roads.
- 5) The Contractor shall provide a responsible Traffic Manager whose duty shall be to direct all traffic on or near active runways, taxiways, haul roads, and highways.

003-3.2 VEHICLE AND PEDESTRIAN CONTROL. Vehicle and access routes for airport construction shall be controlled as necessary to prevent inadvertent or unauthorized entry of persons, vehicles or animals onto air operation areas. No vehicle shall enter the air operations area except at predetermined locations. The amount of construction traffic will require the Contractor to use a security guard at access gates and a flag person to control traffic crossing taxiways and other aircraft movement areas. Contractor personnel who operate vehicles in the AOA shall comply with the airport operator's rules and regulations for vehicle marking, lighting, and operation. Failure to comply may result in fines as listed in Table 1.

003-3.3 CONTROL AND WARNING DEVICES. During construction operations near active taxiways or runways the Contractor shall furnish and maintain medium and low level barricades equipped with red warning lights along the edges of the runway and taxiway safety areas to warn construction equipment to stay clear of the active airfield pavement. The Contractor shall furnish and maintain warning markers with red warning lights along the edges of the runway safety area as designated and detailed on the plans. The Contractor shall maintain warning lights and red warning flags around all equipment, stockpiles, or other areas as directed by the Engineer.

The Contractor shall provide the phone numbers of two (2) of its responsible personnel, including the project superintendent, and one (1) other responsible person whom may be contacted in an emergency. Personnel shall be on call 24-hours per day for maintaining construction hazard lighting and barricades.

003-3.4 VEHICLE MARKING AND IDENTIFICATION. All permitted vehicles operating in the AOA shall display in full view above the vehicle a 3-feet x 3-feet or larger, orange and white checkerboard flag, each checkerboard color being 1-foot square. Any vehicle operating on the AOA shall be equipped with a flashing amber (yellow) dome-type light, mounted on top of the vehicle and of such intensity to conform to local codes for maintenance and emergency vehicles. All vehicles operating within the airfield boundary shall be identified with a sign on each side of the vehicle bearing the contractor's name with an 8-inch minimum letter height.

Vehicles making only occasional visits to the job site are exempt from the identification requirements contained above provided that a properly identified vehicle escorts them into, through, and out of the airport secured area. These and other vehicles needing intermittent identification may be marked with tape or with magnetically attached markers that are commercially available.

003-3.5 VEHICLE TRAFFIC AND OPERATIONS. When any vehicle other than those approved for use in the AOA is required to travel to or from the work area or over any portion of the work area, it shall be escorted by a vehicle properly identified to operate in the area and be provided with a flag on a staff attached to the vehicle. All construction vehicles/equipment shall have automatic signaling devices to sound an alarm when moving in reverse. All equipment shall be operated within the approved speed limit(s).

003-3.6 VEHICLE PARKING. All vehicles shall be parked and serviced in the designated staging and employee parking areas shown on the plans. The Contractor is responsible for transporting his/her employees from these areas to the jobsite.

003-3.7 RADIO COMMUNICATIONS. The control of vehicular activity on the AOA is of the highest importance. This requires coordination with airport users and ATCT. The Contractor's designated and trained personnel shall have direct contact with ATCT ground control. All communications with ATCT shall be coordinated through the City of Flagstaff Operations personnel. However, the Contractor shall properly train his/her personnel, particularly flag persons, on the proper procedures for monitoring radio frequencies.

All vehicles and/or construction equipment operating inside the active AOA, but outside of the designated haul roads, shall be escorted by the City of Flagstaff Operations personnel, who will maintain radio contact with the ATCT. Crossing the active runway shall not be permitted. Vehicular traffic crossing active taxiways shall be controlled by two-way radio with the ATCT by escort or flagmen as detailed on the plans. The clearance shall be confirmed by the driver's personal observation that no aircraft is approaching his/her position. Aircraft have the right-of-way. Construction equipment shall always yield to aircraft.

003-3.8 AIRPORT SECURITY REQUIREMENTS. The Contractor will be required to coordinate his work so as to satisfy clearance requirements for arrival and departure of scheduled aircraft, and in compliance with FAA Advisory Circular 150/5370-2E, concerning operational safety on airports during construction activity.

The airport is operated in strict compliance with Federal Aviation Regulation – Part 107, which prohibits unauthorized persons or vehicles in the Air Operations Area. Equipment and personnel will be restricted to the work area defined on the plans. Any violations by Contractor's personnel will subject the Contractor to penalties imposed by the FAA and the Aviation Department Airport Security Office.

Airport restricted areas are fenced and must remain fenced at all times. Any required temporary security fences and/or gates shall be constructed by the Contractor. Temporary fencing shall be constructed and paid for in accordance with this Item M-003. The gates will remain closed and locked, or if it is being continuously used for ingress and egress, a gate operator will be provided at the Contractor's expense. The Contractor shall furnish the gate operator with a roster of his personnel and ensure that each individual has adequate identification. Interlocking locks supplied by the Contractor will not be allowed. The Airport Operations will control the security check point gates. Gates will be staffed as described in the subsequent paragraph during shift working hours and secured when there is no activity at that location. The Contractor will be responsible for a 24-hour advance notification to Operations regarding the scheduling of the use of the various securities check point gates.

The Contractor shall be responsible to provide at his own cost an escort service for all vehicles that do not operate on a daily basis within the AOA. Escorted vehicles shall not be left unattended. Any escorted vehicle allowed on the AOA by the Contractor shall be escorted back and forth to the point of entry. One badged escort vehicle shall be required for each unbadged vehicle. There will be no exceptions to this requirement.

003-3.9 VIOLATION OF RESPONSIBILITIES. Any violation of 003-3.1 - 003-3.8 shall be considered a violation of the Contract itself and shall be sufficient cause for halting the work without extending the time limit of the job.

003-3.10 FINES. Due to both the safety and security precautions necessary at Flagstaff Pulliam Airport, failure of the Contractor to adhere to the prescribed requirements/regulations has consequences that may jeopardize the health, welfare and lives of the customers and employees at Flagstaff Pulliam Airport, as well as the Contractor's own employees. Therefore, if the Contractor is found to be in non-compliance with the security, airfield badging/licensing and airfield safety requirements by either Airside Operation's personnel or the Engineer or his representatives, the Airside Operations may issue Notice of Violations (NOV). The Contractor may appeal the NOV, however appeals must be made in writing, and within four (4) calendar days of the offending incident, to the City of Flagstaff's Senior Project Manager. The appeal would need to state, in sufficient detail, why the NOV/circumstances is unwarranted. A final and binding decision on the appeal will be made by the City of Flagstaff's Project Management Team within ten (10) working days of receipt of the appeal, the Contractor will then be notified of this decision in writing. No further appeals to the specific NOV will be considered or accepted. Subsequent fines and/or requirements, if any, will be applied in accordance with Table 1, Schedule of Fines listed below and the applicable amount will be withheld from the Contractor's next monthly payment application following the date of the violation. The Contractor will be held financially responsible for all NOV's issued to their subcontractor's or material suppliers associated with this contract.

TABLE 1 – Schedule of Fines for Notice of Violation.

Description of Fines	First Offense	Second Offense	Third Offense
Shift Supervisor* not having proper and current Airport Security Badge or not properly displaying Airport Security Badge.	\$1,000.00	\$5,000.00	\$15,000.00
Lost or unreturned Airport Security Badge.	\$300.00	\$450.00	\$600.00
Un-authorized access to AOA by construction personnel or access through construction gate by un-authorized personnel.	\$1,000.00	\$5,000.00	\$15,000.00
Failure to Escort / be Escorted.	\$1,000.00	\$5,000.00	\$15,000.00
No logo on vehicle or logo is not Correct in name and dimension.	\$1,000.00	\$5,000.00	\$15,000.00
Active runway incursion.	\$15,000.00	\$20,000.00	\$25,000.00
Active taxiway, taxilane or apron incursion.	\$10,000.00	\$15,000.00	\$20,000.00
Active runway or taxiway object free area incursion	\$5,000.00	\$10,000.00	\$15,000.00
Safety violation, such as insufficient barricades, or no flags or amber beacons on vehicle or equipment. Or no red obstruction lighting on cement silo, batch plants, cranes or other equipment with significant height.	\$5,000.00	\$10,000.00	\$15,000.00
Failure to provide lighted barricades.	\$5,000.00	\$10,000.00	\$15,000.00
All other NOV not listed above.	\$1,000.00	\$5,000.00	\$15,000.00

*Contractor must provide a minimum of one properly badged on-site shift supervisor at all times to escort crews.

The City of Flagstaff has the option to issue warnings on the first offense if the incident justifies it. Individuals involved in a non-compliance violation may be required to surrender their security badge and airfield driver's license pending investigations of the matter and the outcome of the possible appeal.

Incursions are defined as any entrance onto an active runway, taxiway, taxilane or apron that may or may not subject any aircraft or crash fire rescue vehicle to yield, stop or change direction to avoid the sudden entrance.

The fourth and each subsequent offence for any of the NOV listed above, the fine shall remain at the same amount shown for the third offence. Advancing from the first offence to the second offence, or from the second offence to the third offence, etc., shall be considered whether the individual is employed with the prime Contractor or any subcontractor or material supplier.

COORDINATION OF CONSTRUCTION ACTIVITIES

003-4.1 WORK SCHEDULING AND ACCOMPLISHMENT. The Contractor shall contact the Engineer each day before he begins work to coordinate the status and nature of work to be done that day. The Contractor shall also report to the Engineer at the end of each day to schedule the work he plans to do on the following day.

SAFETY REQUIREMENTS

003-5.1 GENERAL. Before entering upon or crossing any runway or taxiway, the Contractor shall receive proper clearance. Emergencies and operating conditions may necessitate sudden changes, both in Airport operations and in the operations of the Contractor. Aircraft operations shall always have priority over any and all of the Contractor's operations. Should runways or taxiways be required for the use of aircraft and should Airport operations, the control tower, or the Engineer deem the Contractor to be too close to active runways or taxiways the Contractor shall suspend his operations, remove his personnel, equipment, and materials to a safe distance outside of the object free area and stand by until the runways and taxiways are no longer required for use by aircraft. There will be no compensation for delays or inefficiencies due to these changes.

Throughout the duration of the job, any practice or situations that the City of Flagstaff determines to be unsafe or a hindrance to regular Airport operations shall be immediately rectified.

(1) The following publications contain definitions/descriptions of critical airport operating areas. The areas defined below pertain to airfield safety requirements and are referenced throughout the contract documents.

- (A) Advisory Circular 150/5370-2E, Current Edition, *Operational Safety on Airports During Construction*, sets forth guidelines to assist airport operators in complying with FAR Part 139, *Certification and Operation/Land Airports Serving Certain Air Carriers* and with the requirements of federally funded construction projects.
- (B) FAR Part 77, *Objects Affecting Navigable Airspace*, current edition; establishes standards for determining obstructions to navigable airspace. Civil airport imaginary surfaces are defined in the publication. It also sets forth requirements for notice of certain proposed construction or alteration. Notice of construction provides a basis for recommendations for identifying the construction or alteration in accordance with AC 70/7460-1, *Obstruction Marking and Lighting*, current edition.
- (C) AC 150/5300-13, *Airport Design*, current edition; establishes design, operational and maintenance standards for airports.

(2) The Contractor shall acquaint his supervisors and employees with the airport and operations that are inherent to Flagstaff Pulliam Airport and shall conduct his/her construction activities to conform to all routine and emergency air traffic requirements and guidelines for safety specified herein. The Contractor shall be responsible for providing all safety devices as required for the protection of his personnel.

(3) Protection of all persons shall be provided throughout the progress of the work. The work shall proceed in such a manner as to provide safe conditions for all workers and personnel. The sequence of operations shall be such that maximum protection is afforded to ensure that personnel and workers in the work area are not subject to any dangerous conditions. The Contractor must provide safety measures to guard against injury.

(4) During the performance of this contract, the airport facility shall remain in use to the maximum extent

possible. Use of areas near the Contractor's work will be controlled to minimize disturbance to the Airport's operation. The Contractor shall not allow employees, subcontractor's, suppliers, or any other unauthorized person to enter or remain in any airport area which would be hazardous to persons.

(5) All work to be performed which is too close to an active runway, taxiway or apron under operational conditions shall be performed when the runway, taxiway or apron is not in use. Such work shall not be accomplished without prior permission from the Engineer. Requested closings shall be directed to the Engineer in writing at least 72-hours in advance. The Engineer will then notify the City of the upcoming closure.

(6) The Contractor shall be aware of the following types of safety problems and/or hazards. These problems or hazards shall not be permitted. Should any of these problems or hazards arise during construction, the Contractor shall immediately rectify/correct the problem or hazard to the satisfaction of the Engineer and Operations Personnel:

- (a) Trenches, holes, or excavations on or adjacent to any open runway or in safety areas.
- (b) Unmarked/unlighted holes or excavation in any apron, open taxiway, open taxilane, or related safety area.
- (c) Mounds or piles of earth, construction materials, temporary structures, or other objects in the vicinity of any open runway, taxiway, taxilane, or in a related safety, approach, or departure area.
- (d) Vehicles or equipment (whether operating or idle) on any open runway, taxiway, taxilane, or in any related safety, approach, or departure area.
- (e) Vehicles, equipment, excavations, stockpiles, or other materials which could degrade or otherwise interfere with electronic signals from radios or electronic navigational aids (NAVAIDS).
- (f) Runway surfacing projects resulting in excessive lips greater than 1-inch for runways and exceeding 3 inches for edges between the old shoulder and new surfaces at runway edges and ends.
- (g) Unmarked utility, NAVAID, weather service, runway lighting, or other power or signal cables that could be damaged during construction.
- (h) Objects (whether or not marked or flagged) or activities anywhere on or in the vicinity of the airport which could be distracting, confusing, or alarming to pilots during aircraft operations.
- (i) Un-flagged or unlighted low visibility items (such as tall cranes, drills, and the like) anywhere in the vicinity of active runways, or in any approach or departure area.
- (j) Misleading or malfunctioning obstruction lights or unlighted/unmarked obstructions in an approach to any open runway.
- (k) Inadequate approach/departure surfaces needed to assure adequate landing/takeoff clearance over obstructions or work or storage areas.
- (l) Inadequate, confusing or misleading (to user pilots) marking/lighting of runways, taxiways, or taxilanes, including displaced or relocated thresholds.

(m) Water, dirt, debris, or other transient accumulation which temporarily obscures pavement marking, pavement edges, or derogates visibility of runway/taxiway marking or lighting.

(n) Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of airport operations area.

(o) Trash or other materials with foreign object damage (FOD) potential, whether on runways, taxiways, or aprons, or in related safety areas.

(p) Inadequate barricading or other marking which is placed to separate construction or maintenance areas from open aircraft operating areas.

(q) Failure to control vehicle and human access to open aircraft operating areas.

(r) Construction/maintenance activities or materials which could hamper the response of aircraft rescue and firefighting (ARFF) equipment from reaching all aircraft or any part of the runway/taxiway system, runway approach and departure areas, and aircraft parking locations.

(s) Bird attractants on airport, such as edibles (food scraps, etc.), miscellaneous trash, or ponded water.

(7) The Contractor shall conduct activities so as not to violate any safety standards contained herein. The Contractor shall inspect all construction and storage areas as often as necessary and promptly take all steps needed to prevent/remedy any unsafe or potentially unsafe conditions/activities discovered.

(8) Before actual commencement of construction activity, the Contractor shall notify in writing, at least 72-hours in advance, Airport Operations and the Engineer of his intentions to begin construction, stating the proposed time, date, and area of which commencement is to occur in order for the appropriate Notice-to-Airmen (NOTAM) to be issued.

Upon completion of work and return of all related areas to standard conditions, the Contractor shall again notify Airport Operations and the Engineer in writing, and describe the area that is complete and available for normal airport operations.

(9) *Debris.* Debris, waste and loose material or any other FOD (including dust and dirt) capable of causing damage to aircraft landing gear, propellers or being ingested in jet engines shall not be allowed on active aircraft movement areas or adjacent infield areas. Materials observed to be within these areas shall be removed immediately and/or continuously by the Contractor. The Contractor shall be required to have a sweeping machine and operator on site, ready at all times during construction activity. Where travel on or across runways, ramp areas, taxiways, or aircraft aprons are required, the Contractor shall provide adequate personnel and equipment to keep such surfaces clear of debris. Closed pavements shall be swept clean prior to reopening to aircraft traffic.

(10) *Flagmen.* In accordance with the specifications, the Contractor shall furnish, at his own expense, flagmen as necessary to control his traffic unless otherwise directed by the Engineer.

(11) *Trenches, Excavations and Stockpiled Material.* Open trenches or excavations exceeding 3-inches in depth and 3-inches in width or stockpiled material will not be permitted within the limits of restricted areas of operational runways or taxiways. Covering for open trenches or excavations shall be of sufficient strength to support the weight of the heaviest aircraft operating on the runway or taxiway.

(12) Construction in Proximity to Active Runways and Taxiways.

Taxiway Sides. If appropriate construction/maintenance NOTAM has been issued, construction is permissible as close as the dimensions shown on the phasing plans provided that all Airport Operations and FAA criteria are met. This dimension(s) shall be clearly marked in the infield areas with warning flags at 10-foot intervals.

(13) *Equipment Height Restrictions.* Maximum permissible equipment height varies by location and by construction phase. Maximum equipment height requirements shall be in accordance with Part 77. Atop all equipment booms shall be mounted the white and orange checkered flag described in Paragraph 003-3.4. The top 10-feet of these booms shall be painted fluorescent orange and they shall be equipped with a red obstruction light. Any crane erections shall be coordinated with Operations and the Engineer during every shift.

(14) Miscellaneous.

(a) Open flame, welding or torch cutting operations is prohibited unless adequate fire and safety precautions have been taken and the procedure has been approved by the Engineer.

(b) All materials and equipment when not in use shall be placed in approved areas where they will not constitute a hazard to aircraft operations and not penetrate clearance height restrictions as shown on the Construction Restriction Plan(s). All equipment shall be parked in the appropriate area(s) when not in use.

(c) The Contractor shall provide the Safety/Security Manager with a current list of all employees working on the airport. The list shall be maintained current by the Contractor and subcontractors.

(d) Except for emergencies, all contact with airport personnel shall be made through the Engineer. For emergencies involving safety (injuries, fires, security breaches, etc.), the Contractor shall make direct contact with Airport Operations followed by notification to the Engineer as soon as possible.

003-5.2 HAZARD MARKING. Hazard-marking barricades, traffic cones, flashers, etc. should be used: to identify and define the limits of construction making them visible to aircraft, personnel, or vehicles; to identify hazards such as open manholes, small areas under repair, stockpiled material, waste areas, etc.; to prevent aircraft from taxiing onto a closed runway for takeoff; and to identify FAA, airport, and cables, power lines, instrument landing system (ILS) critical areas, and other sensitive areas to prevent damage, interference, and facility shutdown. Hazardous areas, in which no part of an aircraft may enter, should be indicated by the use of barricades marked with diagonal, alternating orange and white stripes. The barricades should be supplemented with alternating orange and white flags, and installed so that they are always in the extended position and properly oriented. During reduced visibility or night hours, the barricades should be supplemented with flashing red lights. The intensity of the lights and spacing for barricades, flags, and lights should be adequate to delineate the hazardous area without ambiguity. The Contractor shall have a designated person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades.

003-5.3 CONSTRUCTION AREA MARKING AND LIGHTING. Low profile lights, retro-reflective taxiway edge markers, low level barriers, and warning flags shall be provided and erected by the Contractor as shown on the plans or as directed by the Engineer. All construction areas, including closed runways and taxiways, should be clearly and visibly separated from active air operation areas. Hazard areas, facilities, cables, and power lines should also be clearly identified by the Contractor. The Contractor is responsible for maintaining the condition and visibility of all markers identifying above-mentioned areas and that marking and lighting aids remain in place. Alternating orange and white flaglines, traffic cones, omnidirectional red flashers, and/or signs



should be used as necessary to clearly separate all construction/maintenance areas from other parts of the AOA. All barricades, temporary markers, flaglines supports, and other objects placed and left in safety areas on any open runway, taxiway, or taxilane should be: as low as possible to the ground; of low mass; easily collapsible upon contact with an aircraft or any of its components; weighted down or sturdily attached to the surface to prevent displacement from propwash, jet blast, wing vortex, or other surface wind currents; and if affixed to the surface, frangible at ground level.

003-5.4 CONSTRUCTION NEAR NAVIGATIONAL AIDS. Construction materials and equipment shall not be placed or parked where they may interfere with the line-of-sight of the ATCT and navigational aids in operation. The City of Flagstaff shall determine if any materials or equipment will cause any type of interference.

003-5.5 CONSTRUCTION SITE ACCESS AND HAUL ROADS. The Contractor should submit specific proposed ingress and egress routes associated with specific construction activities to the Engineer for evaluation and review prior to commencing construction activities. Aircraft Rescue and Firefighting (ARFF) vehicles shall not be impeded at any time when traveling on access roads, haul roads, taxiways, and runways

003-5.6 TRENCHES AND EXCAVATIONS. Open trenches and excavations at the construction site outside of the RSA should be prominently marked with red or orange flags, as approved by the Engineer, and lighted with red light units during hours of restricted visibility or darkness.

Excavations and open trenches may be permitted up to the edge of structural taxiways provided the drop-off is adequately signed, marked, and lighted and the appropriate NOTAM is issued.

003-5.7 CONSTRUCTION MATERIALS STOCKPILING AND EQUIPMENT STORAGE. There shall not be any equipment storage in the active runway and active taxiway safety areas or in the infield areas. Refer to the Special Provisions Specification for limitations on stockpiled material. Stockpiled materials and equipment should be prominently marked with red flags and lighted during hours of restricted visibility or darkness if in the air operations area. Stockpiled material or equipment should not be stored near aircraft turning areas or operational movement areas, aprons, or excavations and trenches. Stockpiled materials or equipment should not be stored near NAVAIDs, visual or approach aids, nor should they obstruct the ATCT's line of sight to any runway or taxiway. The Contractor should ensure that stockpiled construction materials and equipment do not cause degraded or hazardous conditions to airport operations safety. This includes determining and verifying that stockpiled materials and equipment are stored or parked at an approved location, that they are properly stowed to prevent foreign object debris (FOD), attraction by wildlife, or obstruction of air operations either by their proximity to NAVAIDs or to aircraft movement areas.

003-5.8 OTHER LIMITATIONS ON CONSTRUCTION. Open flame welding or torch cutting operations are prohibited unless adequate fire and safety precautions are provided and have been approved for use by the Engineer. Under no circumstances should flare pots be used near aircraft turning areas.

003-5.10 FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT. Waste and loose materials capable of causing damage to aircraft landing gears or propellers or capable of being ingested in jet engines should not be left or placed on or near active aircraft movement areas. Materials tracked onto these areas should be continuously removed during the construction project. It is also recommended that waste or loose materials which would attract wildlife be carefully controlled and removed on a continuous basis. A minimum of one (1) operational vacuum sweepers and an operator, and one (1) 4M water truck with an operator, shall be on-site and operating continuously while the Contractor and/or any subContractor is working on airfield pavements.

003-5.11 RUNWAYS AND TAXIWAYS. Nothing shall be placed upon runways, taxiways, taxilanes, or aprons without authorization from the City of Flagstaff.

CONTRACTOR QUALITY CONTROL

003-6.1 The Contractor shall be responsible for developing and implementing a Contractor Quality Control Program including inspections necessary to assure compliance with the requirements of this section in accordance with Item P-100 of the Civil Technical Specifications.

METHOD OF MEASUREMENT

003-7.1 No separate measurement for Airport Safety and Security will be made and shall be considered incidental and included in other items of work. All costs associated with Airport Safety and Security are to be included in other items for which payment is made.

END ITEM M-003